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PUBLIC HEALTH AS A CAREER

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State Commissioner of Health, Albany, New York

DeLamar Lecture read before the School of Hygiene, Johns Hopkins University, Baltimore, Maryland, January 28, 1924.

"NO ONE can do more to influence our best young men to take up public health as a life career than men who are already in it. Is there not a joy in seeing death rates go down; in seeing preventable diseases disappear; in seeing streets cleaner and houses better; in seeing cheeks rosier, muscles firmer, and backs straighter? Is there not a satisfaction, greater than that which comes from large money earnings, in feeling that one has had his little part in making the world a better place in which to live? And if this is so, why not tell it to the young men?"

So writes Professor Whipple of Harvard University, and to that end I present for your consideration the following observations:

In order to visualize the present status of public health work and to forecast its future growth and requirements, especially as regards the personnel which may be expected to direct it, it is well to review briefly the human and scientific factors which have led up to the modern public health movement, so rapidly assuming the character of a world-wide crusade against preventable sickness and death, resulting, in those countries and communities in which the campaign has been intelligently fostered for a number of years, in increased expectancy of life in all age groups, decreased mental and physical disability and greater material prosperity among the citizenry, who by the practice of sanitation have become more adequately equipped to withstand the many ills inseparable from human existence.

The desire to prevent sickness and ward off death is in evidence throughout the recorded history of mankind. It is an attribute as instinctive to the mind of man as his need for religious belief. The blind gropings of the people of the earth to understand the cause of disease and to prevent it have in many epochs been directed to the path of truth by men of prophetic vision who lived far in advance of their generation. Egyptian, Indian, Hebrew, Roman, and Greek have made their contributions to sanitation and hygiene, which, primitive as they may seem in the light of modern knowledge, are as fundamentally sound and applicable today as when first propounded, and worthy of our highest admiration and respect. These ancient flashes of truth were well-nigh extinguished and totally neglected during the dark days of the middle ages when superstition, intolerance, selfishness and despair overwhelmed the people of Europe, and not until flout-

ing of sanitary laws—or rather of ordinary civic decency—had exacted a toll in millions of lives from pestilential disease, did civilized man become aroused from his lethargy and strive to fight intelligently his ever-present enemies in the field of sickness and death.

It is recorded that as a result of the great epidemic of plague which overwhelmed Europe that the Venetian Republic was the pioneer in establishing what may be regarded as the first board of health. In 1348 three guardians of public health were appointed, who enacted rules and regulations for the exclusion of infected ships, and instituted later the procedure of quarantine for infected persons. This example of human disaster resulting in renewed impetus to the prosecution of public health activity has been repeated many times even to our day. Great epidemics and epoch-making discoveries in the field of preventive medicine have always been the stimulus to greater public health activity.

Thus after several centuries, during which health work made notable progress —especially in England and Germany— another world plague, smallpox, resulted in the discovery by Jenner of a specific method of prevention, a glorious example of the value of critical observation and correct deductive reasoning. Again, the great epidemics of cholera during the middle of the nineteenth century added impetus to public health progress and were the incentive to the formation of what proved to be later the greatest municipal health department in the world, namely, that of the city of New York, together with the establishment of state boards of health in Massachusetts and Louisiana.

The development of the microscope and microscopic technique leading to the recognition of certain organisms as the cause of disease, marks the logical birth of scientific public health work. Koch's discovery of the tubercle bacillus in 1882 with consequent knowledge of the method of dissemination of human tuberculosis may be regarded as the foundation upon which has been built our present-day procedures for the prevention of infectious disease. The control of tuberculosis, for which no specific preventive or cure has yet been discovered, requires practically the complete armamentarium of the public health official—vital statistics, sanitation of the household, ventilation, prevention of contact infection, and in certain cases isolation of infected persons, the hygiene of infancy and childhood, industrial hygiene, and last but not least, public health education. Thus, paradoxical as it may seem, this world scourge—happily yielding in a remarkable degree during the last quarter of a century to concerted efforts directed toward its eradication—has compensated in large part for the world-wide damage that it has caused, by becoming the entering wedge for general public health work. Only very recently have campaigns against other diseases, such as influenza, poliomyelitis, and intensive work for the eradication of diphtheria contested its preëminence.

The art and science of medicine have passed through many phases. The growth of medical knowledge has not been steady, but characterized by ripples and waves of progress as fundamental truths brought to light have paved the way to their practical utilization.

This is the age of the laboratory—chemical, physical and pathologic—of technical diagnosis, and with the disappearance of the general practitioner in favor of the specialist, neglect of the art of medicine and habit of critical observation and of self-reliance which characterized the previous generation of physicians. But we are just entering another phase of medicine whose importance has long been recognized by health officials and coöperating bodies, and recently by industrial concerns, insurance companies and the like. I refer to the era of preventive medicine. The medical profession as a whole and medical educators are

just awakening to the fact that what will be demanded of the future physician, indeed is now called for by daily increasing numbers of people, is practical scientific advice on how to keep well, avoid disease and prolong life; and whether or not the medical student of the future intends to devote his life to the service of public health, he will not be abreast of the times unless he has been taught to think in terms of etiology of all pathologic conditions which he encounters and of means by which they could have been prevented. This is the knowledge for which the intelligent individual of the future, his community, state and nation, are going to seek and be willing to pay for; and blind indeed are the medical educators who can not read the signs of the times.

The preventive viewpoint should be stressed by teachers of every branch of medicine, and the special courses in hygiene and sanitation at present frequently ludicrous should be greatly strengthened even at the expense of many hours of teaching and study of subjects which are far less essential to the making of the well-grounded physician. It will be many years, if ever, before health work can be carried out efficiently without the cooperation of the practicing physician, and it is to his advantage as well as that of the public health service that he should be familiar with the fundamental principles of preventive medicine. So I say to you gentlemen, whether or not you have made up your minds to devote your lives to the service of the public health or to enter upon medical practice, the time that you have spent here, if properly utilized, will never be regretted. It will make you better physicians in whatever branch of medicine you may choose to engage.

In discussing the advantages and disadvantages of a public health career I shall assume that graduates of this school intend to make public health their principal life work and seek full-time positions. It is a serious step and one which should not be taken without serious consideration. The medical practitioner may and often does make a good health officer, and up to the present nearly all those holding prominent positions have of necessity been self-taught, largely in the school of experience. On the other hand, whether self-taught or trained in one of our great schools of hygiene, the health official practically never returns to the practice of medicine. His bridges have been burned behind him. I state this as a fact without dwelling on the reasons, which are by no means obscure.

No one should deliberately enter upon public health work as a career without obtaining all available knowledge as to the fundamental requirements of that work and the conditions which are likely to attend its prosecution. Many men have entered the field from dissatisfaction and frequently on account of lack of success in private practice. Not a few of such have become successful health officials. If an undergraduate or postgraduate medical student finds himself strongly attracted to some branch of medical science or public health, such as bacteriology, physiology, research, vital statistics, or one of the many clinical specialties, it should not be difficult for him to map out his future life work, the success of which will depend largely on fundamental knowledge of the subject and technical skill in its application; but when a man who has not developed any particular preference in favor of one of the above is confronted with the broad question—"Shall I practice medicine or take up full-time health work?"—the answer is far less simple.

As an aid to the solution of the problem may I call your attention to certain fundamental contrasts between the practice of medicine and public health. The growth of medical knowledge during the past 25 years has become so great that the modern general practitioner in order to qualify for the first ranks must absorb a mass of facts and theories which are

constantly being added to, and already taxes the average mental capacity to digest and utilize it. On the other hand, the fundamental principles of public health administration are not difficult to acquire by persons of average intelligence, for it is not essential to success nor does any health official possess profound technical knowledge of every branch of hygiene and sanitation. But he who enters upon public health work should be familiar with fundamental facts, the scope and possibilities of utilization of the various branches of public health work, and profoundly grounded in at least one or more of the most important.

The practice of medicine carries with it at least one great charm, namely, the intimate personal relationship between the physician and patient, which finds no counterpart in public health work. The health officer comes into contact with groups and their representatives, and the problems presented to him are not personal but general.

The practicing physician is soon apt to establish himself in a fixed abode; the health official, whether from the nature of the work required of him, and quite as frequently from causes which he can not control, is frequently a wanderer, at least in the early stages of his career. The practicing physician is his own master and dependent upon his own efforts and knowledge for success, mediocrity or failure. The health officer is the servant of the county, state and nation, or organization for which he works, and subject to their wishes. His success or failure depends in the last analysis upon the approval of his employers, which is by no means always wisely bestowed or withheld.

The financial returns from an established private practice, and notably of the specialties, are on the average far greater than may be expected from present-day salaries provided for public health work, which, while on the whole showing improvement, are yet a ridiculously inadequate return for the years and money spent in qualifying for a position of such importance to the public welfare.

Perhaps the greatest deterrent to entrance upon a public health career is the element of politics as affecting freedom of action and tenure of office. It is unquestionably true that up to the present time there is a pretty general opinion among partisan politicians that the health officer should be no more immune to political considerations than any other public office holder, and with every political turnover we have the humiliating spectacle of good health officers, especially in cities, but also in states, counties, towns and villages, being thrown out, often for no other reason than that they belong to the opposite party or are appointees of an outgoing administration. It is true that the majority of health officers thus affected have been part-time officials, frequently giving but little time to their public duties, and largely dependent for a livelihood upon their private practice, and I believe that the full-time health official qualified by training and experience who is able to win the confidence of the public will not frequently be made a political pawn.

Lest you may think I have painted too black a picture of public health service, I here set forth briefly the brighter side of the story.

Granting all the aforesaid disadvantages and others that I may have overlooked, and with full recognition of the sacrifice of personal freedom, of financial remuneration and not infrequently domestic and social aims and enjoyments, I know of no more satisfactory career than that which is offered by the various branches of public health service, or one which is filled with a like variety of human interests. While it is true that salaries tend to be more adequate there are but few available which will provide more than a decent living and only with

the practice of strict economy permit saving for the proverbial rainy day. On the other hand, such salaries are paid regularly, require no bookkeeping or the disagreeable task of collecting from a reluctant, ungrateful or dishonest patient, and there is every chance of greater reward for those who establish a reputation for efficiency in the public health field. The country is crying for good health officers and not obtaining them, for but few such are available.

It therefore follows that the qualified health officer can always find a position which will enable him to make a reasonable living, quite in contrast to the case of the practicing physician who must wait for months, and not infrequently support himself by means of outside work, before he is able to establish a paying practice. He must have a good deal of capital at his disposal during the unproductive years. The health official requires little or no capital investment and need maintain few or no overhead charges. The first position accepted by a health officer is rarely, to my knowledge, very long retained. He must find himself and also the job that suits his capabilities and personal needs, but if he be of the right kind of material he will have little difficulty in so doing, although the quest may entail a good deal of wandering and some disappointments.

Unlike the practice of medicine, public health service permits hours of work, sleep and recreation to be reasonably regulated with due regard to the full performance of duty, and on the whole the physical and mental condition of public health men and their expectancy of life is highly favorable when compared with that of the physician of large practice with its attendant worries and perplexities.

Regarding the factor of politics as affecting official action and tenure of office, I have already stated the conditions as I see them in this country to-day, but that they are beyond remedy or in any sense inherent in the nature of public health service I do not for a moment believe. We have only to look at the example of England with its much longer experience than ours to realize that public health service may be placed on a permanent, dignified and well-recognized plane absolutely free from political control, and I have not the slightest doubt that the time is soon coming when a similar condition of affairs will prevail throughout the United States. Without offering any defense for cheap political partisanship which brings about the loss of office of a faithful and efficient health officer—an event, as I have stated, of all too frequent occurrence—I am inclined to agree with Professor Winslow of Yale that very often the health officer has only himself to blame, frequently because he himself has played politics as a partisan and to a greater or less extent has conducted the affairs of his office on a political basis, and even taken active part in political campaigns. To my mind this constitutes a total misconception of his sworn duty to those whose physical welfare has been placed within his care. He is simply gambling on his party's success at the next election, and if he loses he is quite properly thrown out. He has played a game, lost, and should pay the penalty. Again, the health officer, however well-meaning and independent, may not have been able to impress the public with the value of the work performed and of the aims projected, thereby losing the one great safeguard of tenure of office—the force of public opinion, without which no laws or regulations relating to length of service and removal from office can long suffice to retain him. Again, the health officer may possess so little tact in the administration of the affairs of his office and in his relationship with officials and the public as to alienate the sympathy and coöperation of both, or he may be so visionary in his aims, with but little regard to probable results and the financial cost involved, that he is not taken seriously, in which case his usefulness to

that community has ended and he should not wait to be told so.

Since the reorganization of the State Department of Health of New York in 1913 under my distinguished predecessor, Dr. Hermann M. Biggs, notwithstanding constant changes in party control—with the exception of the first year when, due to insufficient understanding of the aims and objects of the far-reaching nature of the reorganization and consequent suspicion of it, there was some opposition on the part of the legislature—there has never been, up to the present time, the slightest attempt to exert political pressure on the Department or any of its officials. On the contrary, the Department has received whole-hearted support and encouragement from the various Governors and legislators, whatever their political complexion, and this has been brought about by the statesmanship and vision of the late head of the Department with the aid of a loyal staff who were required solely to perform their obvious duty without fear or favor.

In the course of time you gentlemen, having been thoroughly grounded in the fundamental principles of health work, will seek and obtain positions in which those principles are to be tried out in actual practice and will then encounter that most important factor in public health administration—the human element. Upon the skill with which you are able to deal with it will largely depend your future success or failure. You will have occasion to make use of the nicest diplomacy, often of real statesmanship, and not infrequently be called upon to match wits with those whose motives are not to be trusted, to overcome ignorance and prejudice and to set the misguided on the right path. Your best efforts will not always meet with success, but your failures will grow less with time and experience and with the exercise of patience, charity and forbearance, for it must never be lost sight of that what may seem to you vicious opposition is very often in reality simply lack of understanding of motives and proposals, which it is your duty to overcome. For many years it was my privilege to be closely associated with one of the greatest leaders in public health, and to study and emulate to the best of my ability what may be called his technique of administration. You, too, are most fortunate in having the opportunity to work under another great leader, the director of this school, study carefully his career and methods, especially as regards human contacts, and if one of you is able to pattern his own official life closely after that model, some day, perhaps, there may be a second Welch to adorn the pages of public health history.

In conclusion may I suggest for your guidance a few bits of advice which I know by experience to be sound.

Choose a public health career for two reasons only—because it attracts you and because you believe yourself fitted for it.

You have broad technical knowledge. Give others the benefit of it, but only as occasion requires and not for personal glorification.

Official representatives of the people and the people themselves may not understand public health work, but frequently possess other knowledge which may be of service to you.

Maintain your dignity at all times, but do not stand aloof from human contact.

If you feel superior to those about you, don't show it. Perhaps it is only imagination.

Make many friends, but few intimates.

Be a good listener, but not too ready talker.

Practice public speaking. Eloquence is a rare gift, but is not essential to the command of respectful attention.

Be loyal to your associates and true to yourself.

Never permit political sympathy to influence an official act.

Be not oversuspicious of evil intent. Give everyone the benefit of a doubt.

Be willing to grant favors to all those

that seek them worthily, provided that it is not incompatible with the performance of your sworn duty.

Have vision, but be not visionary.

Lead the procession always, but look behind once in a while to see if you are being followed.

If you can not obtain all your objectives take what you can get, and try again.

Know when you are beaten, and take your defeat gracefully.

Be willing to compromise in order to reach an objective, but never with your conscience.

Frankly acknowledge a mistake, but do not make it a second time.

Finally, as a general guide to the conduct of your official and personal life, I quote Thackeray's verse:

"Come wealth or want, come good or ill,
Let young and old accept their part,
And bow before the Awful Will,
And bear it with an honest heart.
Who misses, or who wins the prize?
Go, lose or conquer as you can;
But if you fail, or if you rise,
Be each, pray God, a gentleman."

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THE SERVICE OF EPIDEMIOLOGICAL INTELLIGENCE AND PUBLIC HEALTH STATISTICS

N. V. LOTHIAN, M.A., D.P.H.

Field Epidemiologist, Health Section, League of Nations, Geneva, Switzerland

Read before the Section on Vital Statistics of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 11, 1923.

BEING by good fortune in the United States at the time of this meeting, I have been asked to outline briefly to you something of what we are attempting to do in the service of Epidemiological Intelligence and Public Health Statistics of the League of Nations Health Section at Geneva. I am the more encouraged in seizing this opportunity by the approval of our Medical Director, Mr. Rajchman, lately a visitor himself to these United States, and of my immediate chief, Mr. Sydenstricker of your Public Health Service, a man well known to you in the deliberations of this section, who took over the new service at the beginning of the year.

You may remember that the League of Nations is an association of states which have undertaken certain international obligations to coöperate in matters of international concern. Article 23(f) of the original Covenant empowered the League "to take steps in matters of international concern for the prevention and control of disease," and it was not long ere conditions of epidemic disease in Eastern Europe developed to such an alarming extent as to call into active existence the Health Organization as we now know it. This organization then, is simply a special application, in the field of health questions, of the attempt to put international relations on a firmer basis; it has no separate existence, and its work emanates from the efforts of the states members.

I regret that time does not permit me to explain the constitution of the Health Organization, nor its relationship with preëxisting organizations such as the Office internationale d'Hygiène publique and the League of Red Cross Societies, but I may say that every effort has been made—and with fruitful and successful results—to coöperate with these organizations, and to correlate and delimit the functions and scope of activities of each of them without overlapping.

To the activities of the Health Organization I can, again, only refer under a few broad headings. The coördinating and executive work during recent years

has been considerable, ranging from the work of the Epidemic Commission in Eastern Europe and among Greek refugees, via the European Health Conference, productive of so many valuable conventions, to the study of more detailed problems in conjunction with other technical organizations, such as anthrax in industry, opium requirements, and the health problems of inland waterways. I cannot but refer also to the organization of interchanges of health officers, under which scheme I am fortunate to be here, conducting a party of 25 European, and South and Central American visitors on a three months study-tour of your health administrations. I may say that we look forward to the beneficial results of these interchange visits with the greatest confidence. The extension and development of the scheme has—I am happy to say—been rendered possible by the invaluable aid of a subvention accorded to the League for this purpose from the International Health Board.

Another branch of activity has been the initiation and coördination of applied research work on the basis of a common plan, commencing with the endeavors to reach uniform standards of potency in serological products, and uniformity in methods of sero-diagnosis; and developing recently to include the whole question of those potent drugs which are standardized by biological methods.

The third main group of activities comes under the head of *intelligence*, and covers a wide field, ranging from the question of sleeping sickness in tropical Africa, of the control of sea-borne disease in Far Eastern ports, and of pilgrim-borne disease in the Holy Places of the Near East, to the collection and utilization of current reports on morbidity and vital statistics, which are the more special domain of that service about which I am speaking to you to-day, a service whose activities began under the older League of Red Cross Societies, but have during the last year been expanded and developed to a notable extent.

The service is in no sense a "super-statistical" organization but rather a clearing house and coördinating agent for the coöperative development of information for international use. Intimate acquaintance with a diversity of conditions and of technical details is necessary for this work, and progress at first must obviously be gradual, and to some extent experimental. A small technical staff at Geneva assists Mr. Sydenstricker in the work, the duty of abstracting and filing current information being in charge of an assistant statistician who is a countrywoman of your own, Miss D. Wiehl; while my colleague in the field, whose duty is to keep in personal touch with the different countries and to prosecute special studies, is also an American, Mr. T. J. Duffield, lately with Professor Whipple at Harvard.

There are two main fields of activity of the service. The first is that of the collection and publication of Epidemiological Intelligence. Dealing first with Current Intelligence, our data are obtained in the form of current reports, compiled in the various countries and furnished direct to Geneva at the earliest opportunity. These current reports cover all the notifiable diseases reported in the various countries, and also to a large extent the figures of mortality from all causes so far as available. The data obtained in this way are transcribed to convenient forms for easy reference, and are compiled and published currently in the form of our Epidemiological Reports. The mortality data at present obtained cover some 260 cities and are published in the Report on the first of each month. The number of countries from whom morbidity data are now obtained has reached 45, mainly from Europe, but also from all other parts of the world, and arrangements are in progress for increasing this number by the addition of many of the Dominions

and Colonial possessions of the European countries. The data are being obtained with increasing promptness by co-operative arrangements with the various bureaux concerned, by such means as, for example, posting us proof copies before publication, as is done by the U. S. Public Health Service, with the result that we are in possession of the American data by the date it appears in the United States. While the data as published are necessarily perhaps incomplete, they are all we have; but that their prompt publication is of value is unquestionable. This is attested by the fact that compilations of somewhat international character are already published by the Public Health Service of such countries as the United States, England and Switzerland. I have put out for your examination a few copies of recent issues of our Epidemiological Reports. These are, of course circulated to all administrations, and also to other accredited bodies. I may say that the World Peace Foundation, 40 Mount Vernon Street, Boston, who act as American agents for the League publications, will be pleased to procure copies for anyone who is interested.

In addition to these regular current reports, special epidemiological reports are obtained as called for by any special situation. Such reports for instance are obtained from our Epidemic Commissioner in Russia, Poland and Greece; as also from the local authorities in the encephalitis outbreaks in the spring of 1923, and of the recent smallpox outbreak in England. The question of telegraphing reports to ensure greater promptitude is under discussion, but is linked up with various other factors; I may say however that a scheme has been worked out whereby the American weekly summary can be cabled to Geneva by an ingenious code costing us only some 500 francs per year.

We also compile an *Epidemiological Bulletin* at intervals, six of which are now available. In these earlier bulletins, the epidemic situation in Eastern Europe is more particularly dealt with. Bulletin 7 will be published shortly and will deal with the annual summary of notifiable diseases in Europe as a whole in 1922; the statistics will be those of cases, by periods as received, and by civil divisions within countries, and will include mortality figures where given. It is intended to produce annual summaries like this as soon as possible each year, not only of morbidity, but also of mortality in such detail as may be advisable.

The other main field of activity may be termed generally Public Health Statistics, and is divided between efforts to improve medical statistics and make them more uniform, and special epidemiological studies. The latter will be developed after due consideration of the more urgent problems in this field. Already it would appear that the special enquiries of the Health Committee into malaria and cancer in Europe will involve a certain amount of special statistical investigation, as also may Nicefaro's proposal regarding the use of uniform hospital records. I may say that the Health Committee has already outlined several projects and questions such as the periodicity of certain epidemic diseases, the world-wide prevalence of others, etc., which only wait the organization and coördination of statistical offices in the various countries. To promote the latter is rather our primary objective at this moment; and again we are indebted to the International Health Board for funds which will make possible certain individual and collective courses, by which young statisticians may study the whole subject.

A necessary preliminary to the evaluation or assessment of any set of data is a full knowledge of how they are collected and compiled. We have therefore had to study for each country its procedure in these respects for its data on morbidity

and the movements of the population. This has been done in most European countries in preliminary form by a local selected individual, whose report is supplemented by visits and further enquiries. These reports are furnishing us with invaluable information on the detailed procedures of collecting the raw data or vital statistics. I may add that as a direct outcome of these enquiries, we have had to go further and undertake a set of studies of the whole system of health organization and administration in each country, under the auspices of which the material is collected. We hope that much of the comparative material in these studies may be made available in due course. Dealing still with Public Health Statistics we have further arranged for detailed statistical analyses of the data of each country, to be undertaken by experts of experience and judgment. Dr. Greenwood of London has already lent his assistance in this work in studies of the data of Holland, Spain, Portugal, and Italy.

To reach greater uniformity, coöperation and conference are essential. Individuals of our staff are regularly in contact with the adminsitrations of the European countries, some fifteen having now been visited. We look forward, however, to perhaps greater results from the Conference of Groups of Statisticians to discuss certain specific questions, the first of which will be held next month at Geneva, where representatives of ten countries will foregather. The conferences are not intended to take decisions, rather are they hoped to enlist coöperation. They will discuss such matters as the comparability of diagnoses in deaths-registration (including requirements as to diagnosis by physician, procedure as affecting reliability, etc.), and will have the opportunity of studying the excellent Swiss system; uniformity in the presentation of statistical data (for which the studies collected at Geneva will furnish rich material); the method of obtaining current mortality data from all causes and from certain specific causes; collecting mortality and morbidity data for certain diseases over a period of years, with the basic tabulations necessary; and so forth.

Finally, I must again refer to the studentships for young statisticians both individual and collective. The first collective course is now being held in Geneva and is affording some eight members from Europe and South America the opportunity of studying the different—and the best—ways of collecting, compiling and analyzing statistics of population, birth, mortality and morbidity, as well as of carrying out special studies and surveys.

In short, we are trying to harmonize procedure, by education and coöperation rather than by trying coercion and imposition, and to bring about the same ends in the international sphere of vital statistics as you of the American Public Health Association are trying to do for your own states in America. I trust that we may be as successful.

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The Fifty-third Annual Meeting of the American Public Health Association will be held at Detroit, Michigan, during the week of October 20th, 1924.

PER CAPITA MILK CONSUMPTION FROM THE POINT OF VIEW OF THE PUBLIC HEALTH OFFICER

HAVEN EMERSON, M.D., FELLOW A. P. H. A.

Professor of Public Health Administration, Columbia University, New York

Read at the World's Dairy Congress in Syracuse on October 8, 1923.

"FOOD we can have in abundance if we devote our time to the conquest of the earth and to the utilization of nature, rather than to conquest of each other" . . . "there is good reason to believe that the available resources of the world are increasing quite as rapidly as the population, and that they will continue to do so for a number of generations if man devotes himself to science and industry rather than to war".

The World's Food Resources. J. Russell Smith.

WITH such opinions expressed by eminent authority it would be out of place for us to spend time just now in discussing the possibility of the production of milk sufficient to meet the reasonable needs of any or all people. We may assume that all the milk that is needed or that people can be taught to use for food, within the limits of economical and advantageous dietaries, can and will be produced through the natural response or adjustment of supply to demand. Nor shall I venture to enter the lists among the dietitians and the physiological chemists to dispute their conclusions as to the desirable use of milk for food. Rather shall I offer some considerations of the use of the public health officer as a means of obtaining and distributing exact facts about the use of milk and the relation of this to the well being of the community.

The health officer of to-day has traveled far and fast from his position in the public mind as a sort of glorified sanitary policeman, eagerly searching for smells and opportunities to prosecute the unwary for a defect of plumbing, or the personification of a militant quarantine, enforcing the appearance of science to the great annoyance of blameless but suspected persons.

He is no longer concerned with communicable diseases alone, among the multitude of preventable afflictions for which education and public protection or service are required. He is by charter or by the force of public opinion obliged to take notice of all disabilities or handicaps to health, as well as of deaths and all diseases for which a proved or probable cause has been declared upon scientific evidence.

He must nowadays create a public opinion interested and determined to be informed on all elements within our control which affect unfavorably the development, growth and duration of human life, and, furthermore, he is forbidden to be content with the mere negative success displayed by an absence of sickness, but is called upon for leadership and public direction and training, in raising the level of living until an aggressive desire and competent knowledge of the ways and means to acquire vigorous health are prevalent throughout his community.

Thus it becomes the function of the health officer to learn the habits and customs of his people, their racial and religious prejudices, much of the intimate economies and household practices of the families, for in a knowledge of these lies the answer to the question which shocks and disturbs us all. Why, in a nation of unparalleled wealth, with the machinery of distribution of supplies unequaled,

with the facilities for elementary education in the main accessible to all, should we see deformity, physical impoverishment, bodily and mental stunting widespread among our childhood and apparently not decreasing materially?

Two possible and often powerful influences which we might expect to correct much of the prevalent inadequacy or inappropriateness of diets at all ages and throughout the country seem to be on the whole inoperative. I refer to thrift as applied by an intelligent economy in the purchase of foods, and devotion to childhood as practically expressed by provision of food to meet the requirements of growth, repair and energy. To be explicit, we know that milk costs less almost everywhere in this country than any food, or rather foodstuffs capable of providing equivalent value for the nourishment of child or parent.

The two facts contained in this statement, the cost fact and the value fact, are the essence of the argument and offer ample justification for the health officer's assuming a direct interest not only in the sanitary or bacteriological control of milk but in the extent and manner of its use and in its cost.

May I propose such questions as many a health officer is asking himself to-day, and to some extent answer them, as they may be, more or less satisfactorily?

What is the desirable per capita consumption of milk in a typical American community?

By typical I mean a mature, permanent or stable group of persons of all ages with no unusual distribution of the important age groups, no specialization in a particular industry which might affect the age, the income, the standards of living or the dietary needs of the people.

Present information as to cost and value makes it quite clear that the entire community would save expense and serve their nutritional needs best if as much as one quart of whole milk were used as food for each member of the population daily. We can go further and say that it is indispensable for steady growth and development of children at least until they reach school age that a quart of milk should enter their daily dietary. We can add a third summary of the situation to the effect that unless at least a pint of milk a day per person is used in a community, waste of income and serious nutritional errors are certain to develop and affect the vitality, sturdiness and capacity to resist disease, of a large number of both children and adults. Let me add further that none of these statements imply that these are measures of what each person in the community is supposed to drink daily in the form of whole fluid milk. The use of milk in all forms of foodstuffs, soups, sauces, puddings, ices, hot and cold drinks, etc., are included in the daily designated allowance.

This estimate of advantageous use of milk does not include the milk from which the finished products, butter and cheese, are made, nor does it include the skim milk powders or the condensed and evaporated milk preparations.

The above statement of an optimum per capita use of milk of one quart per day for the entire population and a minimum safe allowance of one quart for each child under six years of age and not less than one pint, for the remainder of the population is not based upon any single social, economic, chemical or physiological test, study or experiment, but represents the sum of observation in many relief agencies, budgetary studies of families under nursing and dietitian care, taken together with the experience of physicians and of medical services in hospitals, and the exact records of camps, institutions for children and adults, etc.

This general conclusion can be readily verified by anyone with a fancy for figures who will calculate the essential and accessory food qualities and contents of milk and its effect in causing and maintaining good nutrition, growth and development when used as suggested.

The gist of the matter is briefly expressed and in terms not likely to be subject to dispute in a recent radio release issued September 22 by the Commissioner of Health of the State of New York, Dr. Matthias Nicoll, Jr.:

A quart of milk a day for children, but be sure it is clean and pure milk. Milk is a very important food not only for infants and children but for adults. It is an almost perfectly balanced food, containing practically all of the necessary elements for the growth, energy and repair of the body in about the right proportions and in readily digestible form. The importance of milk as an article of diet for children is emphasized by the fact that it is the only food that provides sufficient lime for the proper development of the teeth without including an oversupply of other food elements. Children should have at least a quart of milk or its equivalent in milk products daily.

I know no good reason or valid argument against the opinions here expressed and shall proceed to the consideration of practical experience so far as the records can be relied upon.

Is the consumption of milk a matter of accurate or complete record? A positive answer can hardly be given to this question at present but some facts of obvious value can be reported from reliable sources, and unpublished data can be made available.

The Department of Agriculture is authority for the statement that in 1900 the nonfarming, *i.e.*, the urban and suburban population of the United States, purchased milk and cream exclusive of milk used in the making of butter, cheese and condensed milk products to the extent of 23 gallons per capita, or 184 pints per capita, or one-half of a pint per capita per day throughout the year. The average per capita consumption of whole milk in the United States is given by the same authority as .93 pint per capita per day in 1917 and .94 pint per day in 1920. The figure for the urban and suburban population of the United States given above, namely, one-half a pint per capita per day of milk consumed in 1900 apparently was duplicated by the experience of Philadelphia as late as 1900, while in London, England, in 1892 the amount used was officially given as .25 pint per capita per day. In New York City, for which I was able to obtain the most nearly accurate information for the past five years by months, the daily per capita consumption of milk has varied as follows, using for each year the highest mid-year (*i.e.*, June, July and August) receipts and the population of the city as of July 1, based on the figures of the Bureau of the Census: 1917, .52 pint; 1918, .39 pint; 1919, .37 pint; 1920, .46 pint; 1921, .44 pint; 1922, .41 pint; 1923, .54 pint.

Among the tables published by the U. S. Department of Agriculture in June, 1922, in the Handbook of Daily Statistics is one showing the variation among a number of countries from which we can calculate the daily per capita consumption in pints showing Sweden (1914) at the head with 1.5 pints per capita per day, Denmark (1914), Switzerland (1914), Germany (1913), following closely, all using more than one pint per capita per day. Canada (1916), Hungary (1914) and the United Kingdom (1914) fall in the low groups, using just above (.57 pint, Canada) or just below (.49 pint, United Kingdom) .5 pint per capita a day.

Apparently in this country there is fairly consistent experience in the past five years in the use of milk, about 47 per cent of the total production going to household use and ice cream and another 4.5 per cent to condensed milk. The waste or loss of all milk production runs about 3 per cent per annum.

Among the 83 cities of the United States of 75,000 population or over studied by the Committee on Municipal Health Department Practice of the American Public Health Association in 1920, 14 had no records sufficiently reliable to permit calculations as to per capita daily

consumption of milk. These represented urban populations aggregating 2,055,985.

Of these 14 cities 6 were in the Pacific Coast states, 3 in New Jersey, 2 in Massachusetts, 1 each in Kansas, Ohio and New York. Of the remaining 69 cities 6 reported a daily per capita consumption of one pint or more:

Springfield, Mass.	1.10
Cambridge, Mass.	1.15
Pittsburgh, Pa.	1.19
Detroit, Mich.	1.30
Canton, Ohio	1.37
Paterson, N. J.	1.48

Seventeen cities reported a daily per capita consumption of less than one-half pint:

Baltimore	.35
New York	.46
Indianapolis	.47
New Orleans	.34
Atlanta, Ga.	.27
Birmingham, Ala.	.13
Dallas, Texas	.45
Elizabeth, N. J.	.48
Jacksonville, Fla.	.39
Memphis, Tenn.	.29
Norfolk, Va.	.48
Oklahoma City, Okla.	.21
Omaha, Neb.	.40
Richmond, Va.	.34
San Antonio, Texas	.44
Savannah, Ga.	.47
Worcester, Mass.	.39

It will be noted that of these, 13 are southern cities, New York, Indianapolis, Elizabeth, and Worcester being the other four. The remaining 52 cities studied reported daily consumption from .5 to .99 pint per capita.

As might have been expected, study of the general death rates, the death rates from tuberculosis and the infant mortality rates of these cities show no relationship with the reported per capita consumption of milk in these cities.

It must be admitted that there is laxity and indifference among health officers of municipalities in this country in the accurate recording of the quantity of milk consumed in their community, whatever may be the character of their administrative control of the chemical and bacteriological quality of this food, concerning which chapter XII of Public Health Bulletin No. 136, July, 1923, dealing with Milk Inspection in these same cities gives valuable information.

Taking the most favorable situation, that of a city where the health officer knows the quantity and quality of the milk consumed, is it his function as a public official to attempt to influence the people in the use of milk?

As has been suggested above, the health officer in our cities is more and more expected to direct and encourage educational efforts of schools, civic associations and private health agencies so that all members of the community as may be proper to their age and condition will consciously and intelligently take a personal interest in their own health and follow the teachings of physicians, not only in self-protection against the acute communicable diseases but in the subject of nutrition, growth and development upon which well-being and self-support so largely depend. The health officer should lose no opportunity to teach the public and particularly those groups in sections and districts where, by reason of ignorance, poverty, alien racial customs, and lack of adaptability to new and unfavorable industrial and environmental conditions, he finds among the school children, in the preschool clinics, at the baby health stations, in the prenatal clinics, in the records of tuberculosis, the evidences of unsuitable or inadequate use of foods which would be largely corrected by the increase of milk in the family dietaries. Not only among the poor and the handicapped but among the people of means do physicians find the evidences of poor dietary habits in the serious undernourishment of children.

No one, so well as the health officer, can create and develop confidence in the

safety of the milk offered for sale, or take part as representative of the public in controversies and conferences where the producer and distributor require the steadying influence of the consumer's needs to prevent them from taking unwise advantage of their control of this public necessity.

It is probably of quite as much importance to the health officer to know the distribution of milk by districts corresponding to the population units upon which he bases his analyses of deaths and sickness as it is to know the birth rate by wards, assembly districts or smaller permanent sanitary or block units. Only by having such exact information can he speak with point and accuracy in his teaching of the relation between family milk consumption and the health of the children. So far as I know no city provides among its records of food control for current information as to use of milk by districts in the community. This could be arranged for with but little difficulty by coöperation with the milk distributors.

Once exact information as to the daily per capita use of milk for the whole community or by subdivisions is available by months or seasons and for several years, there will arise at once comparison among cities, and queries as to the reasons for increase or decrease in use. While lack of information as to its value is perhaps the most obvious cause of failure to use to full advantage anything offered for sale, there may be other factors of importance. We have noted during the war period and subsequently an unwillingness on the part of the buying public to continue to pay higher prices equally for all articles however reasonable the increase of price might be. While apparently willing to pay 100 per cent or greater increase in the price of shoes, clothing and meats, for instance, the resentment against even a 50 per cent increase in the price of milk was so great as to cause marked reduction in use. No such statements as this can serve in place of thorough economic studies, but it is of some significance that during the years 1917 to 1923 the prevailing New York price for grade B milk net to the farmer rose from 5.68c per quart in 1917 to 7.58c per quart in 1919 and 1920, and dropped again in 1921 to 6.42c per quart in 1921, the retail prices showing similar changes. The daily per capita consumption of milk followed a reverse curve during the same period, being .52 pint per capita in 1917, .37 (the lowest for many years past) in 1919, rising again to .44 pint per capita in 1921 and to .54 in 1923.

The public still needs much education as to the price of milk and the fact that milk purchased even at the present higher level of prices is a bargain in food value.

Some people living where there is little or no sanitary control or pasteurization of milk have limited its use to cooked products in the household. Others who conceive a dislike of the taste of the pasteurized product have similarly reduced their use of milk. In some of our large eastern seaboard cities with enormous immigrant and first generation populations of foreign parentage, where the southeastern European peoples predominate, we have racial customs acting as a cause of lowered per capita consumption. These peoples rarely use raw whole milk in their own countries and are unwilling to use the pasteurized product when they have been accustomed to soured or fermented milk.

Conversely as the price of milk has fallen, as the campaign among school children for normal height and weight gains has become widespread and popular, as confidence in the safety, uniformity and value of milk has grown through the teaching of health officers, doctors, nurses, dietitians and other social workers, the per capita use of milk has increased.

Certainly the slogan of the war period

affected the habits of many a family and housewives commonly observed the advice to buy a pint of milk for each member of the family before buying meat. I have been informed by personal communication that in one city of first rank in Canada where a benevolent monopoly of the milk distribution has been developed in the hands of one man, and in a similarly important city in the United States where a coöperative undertaking, including milk production and distribution, was brought about following difficulties between the city distributors and the wagon men, the price of milk has fallen and the consumption risen, but I could not obtain exact facts to quote here.

Accepting, then, as facts that the daily per capita use of milk for food has in few if any cities of this country reached the optimum of consumption proposed above, and that the great majority of our larger cities do not record even the minimum advantageous daily use of milk as a food, and furthermore that our information is extremely crude and leaves many points of importance as to use open to doubt, what shall be the program or attitude of the health officer, whether of cities, counties or states in this matter?

The four essential services of probable value to the public which a health officer might properly engage in fall under corresponding administrative divisions of any well organized health department:

1. Through the statistical office all information as to the sale, distribution and use of milk which can be obtained from any source should be assembled and correlated with the facts of record as to population, and the incidence of preventable defects, disease and deaths.

2. Through the educational channels of the health department the public should be taught the simple essential facts, sanitary, economic and nutritional, which will develop confidence and knowledge leading to a larger use of milk as a food.

3. Through inspection and laboratory control at an expense of probably not more than five cents per capita per annum an adequate service for control of the quality of milk offered for sale can and should be maintained in the interest of health and public safety as indicated in the report of the Committee of the American Public Health Association above referred to. A city without sanitary control of its milk supply is taking quite as great risks with its citizens as if there were no fire or police protection provided.

4. It is the particular function of the health officer to be informed and prepared to act in behalf of the consumer to see that all unnecessary costs and handicaps are removed from the production and distribution of milk so that the lowest price consistent with reasonable profit for the farmer and the trade is maintained with the minimum of seasonal variation.

A definite policy and the prosecution of a vigorous program of education by the health officers of the country would go far to encourage milk consumption to such an extent that reduction in various nutritional disturbances of children and adults would ensue, and a great impetus would accrue to the dairying industry, the prosperity of which, more than that of coal and iron, is an index of the intelligence, thrift and progress of a nation in physical fitness and well-being.

It will be many years before the per capita daily consumption of milk in this country reaches an altogether desirable amount, but let us for the present aim to teach the people so well that enough is used to allow each child under six one quart daily and all the rest of the population a pint apiece.

The wealth of the nation in human and material resources will surely be greatly enhanced when the consumer demands and is prepared to pay for a safe quality of milk and an amount which will safeguard the nutrition of his family.

DIET AND DISEASE

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Read before the Food and Drugs Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, October 10, 1923.

FROM time immemorial man has instinctively partaken of the necessities for his own welfare. In prehistoric times he lived by the chase. Later he tamed animals to his service, derived nutriment from their flesh and their milk; he planted grain for his bread and planted a vineyard for his further delectation. In these wild days he raised the pyramids of Egypt, rather the work of giants than of mere men. What recked he, toiling under the burning skies of Egypt, of the antirachitic factor in the sunlight. And yet the fine teeth of Egyptian mummies bear witness to the effective, but then unknown, potency of this element in nature.

The classical authors on diet of the last century dealt with proteins, fats, carbohydrates, and the energy liberated within the body upon their oxidation, with water and with the importance of the flavor of food. Thus, a food for an adult was defined as well-tasting mixture of foodstuffs arranged in such proportion as to burden the body to the least degree and administered in such a quantity as to maintain the body in an equilibrium of substance. The new knowledge introduces vitamins and sunlight as essential factors of proper nutrition without impairing the validity of the older doctrines.

But translated into common values, this means nothing more than a breakfast of coffee, milk, bread, oatmeal, and an egg, and a dinner of soup, meat, bread, potatoes, with a sweet or a bit of cheese. Or, as in the German Tyrol during the past summer, dinner may mean rolls dipped in boiled milk and a large bowl of berries, a real feast for parents, children, grandchildren, and visiting guests.

It has been repeatedly shown of rats, mice, and hogs that they instinctively choose foods which are best for them. For example, when a rat is offered the choice of a perfect synthetic diet deficient only in water soluble vitamin B it rejects this in favor of one to which the vitamin has been added in the form of slight amounts of a watery extract of yeast. Also, everyone knows the avidity with which the bottle-fed baby devours orange juice offered to him and thereby wards off scurvy.

Dr. Edward G. Janeway, a man so celebrated that when called in consultation to the bedside of a patient it was necessary to camouflage his name, so often was his advice desired as a last resort in mortal crises, once told me of a woman whose physician had placed her upon a milk diet for two years without benefit and who had then consulted him. "Go home and eat beefsteaks," he advised, which she did to her happiness, comfort, and restoration. After all, Janeway was merely following the dictates of common sense, common sense being interpreted as the ability to distinguish between what is worth doing and what is not.

It does not seem possible that the various established habits of diet of man can be deleterious to his welfare. For example, the Eskimo lives largely upon meat, and yet does not contract gout. Many authors have tried to fatigue the kidney by administering meat or meat extracts in large amounts, but have failed to find any pathological changes. I was once at a conference of physicians who were attending at a hospital for contagious diseases. The matter of nephritis following scarlet fever in children was

brought up. After scarlet fever the children were always placed on a milk diet in the belief that it was a diet low in protein. However, one of the physicians had calculated that the protein content was really high and that some cases of nephritis developed no matter what was done. Doubt was expressed whether the high protein content had anything to do with the development of nephritis. An outline of work was formulated in which children convalescing from scarlet fever were to be separated into two groups, one receiving the customary diet and another receiving a specially prepared diet low in protein, in order to observe whether the protein content of the milk given had any influence upon the incidence of nephritis among them. The plan was never carried out on account of lack of funds, and so far as I am aware, it is unknown to this day whether the exercise of the urea eliminating function of the kidney bears any relation whatever to the production of nephritis.

It is certain that a man can live with little meat and preserve his health and strength to the full. Four students in my laboratory lived for a week on a vegetarian diet and during other periods of similar length they took two-thirds pound of chopped meat for luncheon in addition to their usual food. This quantity of meat was that partaken daily by the French soldier throughout the war. The power of doing physical work was measured each morning and was unchanged during the periods of meat ingestion from that during the period of a vegetarian diet. The unanimous testimony of all was that they felt sleepy in the afternoons of the days of meat ingestion. That was the only difference.

Meat, especially when given in large quantity, increases the heat production very greatly and is a comfort-producing food in cold weather. The proteins of gelatine, fish, chicken, wheat, and milk behave in the same way and stimulate the body each in the same measure.

The Japanese coolie lives largely upon rice and yet manifests prodigious muscular strength. Lafayette Mendel has related to me his wonderment at the apparent absence of calcium salts from the Japanese diet until he asked a Japanese to prepare food in the laboratory exactly as he would in Japan and witnessed the production of a soup made of ground fish bones.

Muscular power, as maintained by the Japanese coolie living largely on a rice diet, forces upon us the unanswered question, "What is meat?"

Meat is expensive, for 64 parts of the equivalent of human food are necessary for the production of one part of human food in the form of beef (Wood). Beef is preferred to codfish, the production of which requires no human care nor the use of food needed for human beings. It has been suggested that meat is taken because of its flavor. Albertoni and Rossi added 4 oz. (100 gm.) of beef to the vegetarian diet of Italian peasants and reported a better utilization of the diet, due presumably to a greater flow of the digestive juices. Recently, however, from the laboratory of Otto Kestner it is reported that the poor utilization of the lightly milled German war bread was not improved by the addition of meat to the diet. And a final blow to all our ideas about the necessity of flavor is delivered by Hawk, who gave to two subjects pleasant meals during seven days. The ingredients of the food (meat, biscuits, jelly, cornstarch pudding, oleomargarine) were then mixed together and served in a dish smeared with animal charcoal, as was also the drinking glass. The table and dishes upon it were dirty and the floor under the table was sprinkled with malodorous indol. One of the subjects could not retain the food on his stomach, while the other digested and absorbed it as well as he had during the pleasant days of the previous week. While the author of this experiment does not commend it as desirable practice, he nevertheless takes

issue with a statement made by me that what a man likes best he digests best. The experiment would tend to show that filthy streets and filthy tenements had nothing whatever to do with the digestion and assimilation of food and that it is only the lack of food which lowers body weight, the ability to resist disease, and diminishes the sense of right and wrong as well.

It is maintained by Kestner that, whereas the laboring man ingests sufficient protein in any diet he may select, the man of sedentary occupation requires the addition of meat to his dietary of perhaps only 2,000 calories per diem in order to maintain his body in condition.

A diet low in protein and in calories depletes the protein reserves of the cells, as was frequently in evidence during the war. The ingestion of a goodly quantity of meat under these circumstances certainly results in a large retention of protein by the hungry cells, accompanied by a sense of well-being. The Italian soldiers never ate much meat until, after their defeat at Camporetto, the English and French soldiers were sent to strengthen their lines. The Italian soldiers saw the large quantities of meat in the ration of their companions in arms and thereafter vehemently demanded a similar allotment. Who can answer the question, "What is meat?" We know that it is relished. We remember poking fun at the tomato as nothing but flavored water colored red. And now we know it contains vitamins A, B, and C. While we cannot explain meat, we must respect its appeal to human beings, and it is certainly not injurious.

With a plentiful supply and choice of foods the average individual may be trusted to use his instinct in their proper selection. During the war the English people rationed most of their important palatable foods, such as meat, fat, milk, and sugar, and left coarse, lightly milled wheat bread as an elastic reserve to be taken as fuel to fulfill the energy requirements of their muscles. After the war, when importations became easier, it was popularly stated by them that whatever else happened they would return to white bread just as soon as possible. It seems as though this is a better test of values than the frantic appeals of some doctrinaires on this side of the water who wished to ordain by legislation and for all time that lightly milled or Graham bread should be the standard of the American people. "Here," cries Dr. W. excitedly, in the offices of the Food Administration at Washington, "are the pictures of my two children who have never tasted anything but Graham bread." Not to be outdone, a man of high repute whips from his pocket another picture. "Here, Dr. W., is a picture of my five children brought up on patent flour all their lives, and they are just as healthy as yours." The war gave opportunity to every faddist to ride his hobby to extinction.

It is perfectly true that if we eliminate certain vitamins from the diet, child welfare and presumably adult welfare is affected. I need only mention the *eye infection* and lack of appetite which follow the elimination from a diet of the vitamin A contained in butter fat; the general paralysis of the muscles called *beri-beri*, which, together with loss of appetite, comes from the complete elimination of vitamin B found in yeast, orange juice, milk, green vegetables, or the bran of rice or wheat; *scurvy*, which ensues upon a too-exclusive diet of cereals and is cured by vitamin C, contained in orange, lemon, and tomato juice, in potatoes and green vegetables; *rickets*, cured by an antirachitic vitamin sometimes called vitamin D, a component of cod-liver oil and in lesser degree of butter fat, cured also by sunlight and (it is said) by air through which ultra violet rays have at one time passed; *pellagra*, said to be due to a diet containing imperfect proteins and cured, it is said, by giving milk.

These are true dietary diseases, but of

these only one is markedly prevalent, rickets, present in the bottle-fed baby reared without exposure to sunlight, and present also in the breast-fed baby of an imperfectly nourished mother, both reared in a cage called a house, through the glass windows of which the ultra violet rays cannot pass. This disease is overcome by cod-liver oil, for, as is related, the cod, a fish living in deep waters out of reach of the sunlight, has developed within himself an antirachitic factor as a substitute for sunlight. The school of Howland, of Baltimore, has shown that the influence of the antirachitic factor is to preserve the normal ratio between calcium and phosphoric acid in the blood.

It is now pretty well established that a food must contain iodine for the proper functioning of the thyroid gland, especially at the time of puberty and of pregnancy.

No case, however, has been made out for the idea of diabetes being caused by excessive ingestion of sugar with consequent weakening of the power to oxidize this substance.

Certainly, the excessive ingestion of a heat-stimulating food like protein does not produce fever. Coleman and DuBois have shown convincingly that a generous diet in fever does no harm but rather prevents the patient from wasting away. Two young people, after a Princeton baseball game, partook of the same contaminated food and both were thereby infected with typhoid fever. One nearly died when treated to a semi-starvation diet, in Switzerland; the other, treated in America, did well and gained in weight during the progress of the disease. The ancient doctrine to "starve a fever" has been violently overturned, and treatment now better conforms with the instinct of the patient.

Woglom points out that there is no evidence that meat ingestion is the cause of cancer, for cancer is constantly increasing in this country while the consumption of meat is steadily declining. Nor has it been demonstrated that meat ingestion causes arteriosclerosis in man, although Newburgh has shown that it may in the rabbit.

Undernutrition, as has been noted, is always accompanied by an increased susceptibility to disease, especially to tuberculosis. The statistics of American life insurance companies report that obese individuals are poorer risks than people of normal weight. Obesity is not often due to a lessened power to oxidize ingested foods, but is usually due to the fact of an appetite slightly in excess of requirement for the maintenance of the body weight. Thus, if a quantity of food which is the equivalent of a half of a glass of milk be taken daily in excess of the body's requirement, an individual will gain 9 pounds in a year and 90 pounds in 10 years.

During the war Dr. Alonzo Taylor told me of a visit to the trenches at Verdun. He saw there French soldiers returning from the front and passing single file through a communicating trench to the rear. They had been without food or sleep for two or three days. Their faces showed excessive fatigue, combined with a high degree of nervous excitement, a psychic complex obtainable only in warfare. When safely removed from the front, in true French fashion, they partook of bread soaked in wine for their refreshment and relief. Coffee could not have been administered to men in such condition.

Concerning the taking of alcohol I would like to quote the following significant words of Raymond Pearl, of the Johns Hopkins Medical School.[1]

> . . . It is a general, indeed almost universal, supposition that the accumulated experience of life insurance companies has proved . . . that even the most moderate consumption of alcoholic beverages definitely lessens the normal expectation of life. The prevalence of this opinion has come about as the result of three circumstances: first, the extensive

1. Pearl, R., Am. Jour. Hygiene, 1922, II, No. 4.

and intensive propaganda extending over many years, put forth by persons and organizations interested in bringing about the enactment of prohibitory laws; second, the fact that very few persons have taken the trouble to investigate the actuarial data on the point; and, third, the fact that life insurance companies generally discriminate in some degree (ostensibly at least) against users of alcoholic beverages.

Pearl analyzed the family history records of 1,569 persons who had lived near Baltimore in order to determine the mean age at death of persons of different drinking habits. He found that there is no indication in either sex that the moderate and occasional consumption of alcoholic beverages adversely affects the expectation of life. In the female group 205 individuals in the moderate and occasional group lived on an average three years longer than the 399 women who were total abstainers, a difference which Pearl does not regard as statistically significant. In the group of 389 men who were heavy or steady drinkers, life was curtailed by four years, and among a small group of 18 women the length of life was less by thirteen years than that of total abstainers. The expectation of life in this group is therefore significantly lower than those in either of the other groups.

Pearl believes these data to be more critically accurate than any which have hitherto been available on this problem.

A cultivated Frenchman has denounced our strictly American disease of nervous prostration as due to the quick lunch habit—to the rapid ingestion of bad food. No civilized man lives to-day who approves the saloon or public house, whatever name you call it, but no truly civilized man would deny another the right to take a glass of red wine with his food. That right has been denied him by fanatics who never tasted red wine in their lives and who could not appreciate it if they did. May we not some time expect a Twentieth Amendment denying coffee to Americans on the ground that their nervous systems are being wrecked therewith?

I have pointed out in this essay that the ordinary mortal has little to fear if he plans his dietary to conform with the moderate dictates of his appetite. He takes an egg *on* toast, porridge *and* milk, corned beef, potatoes *and* cabbage, lettuce or beet tops *and* olive oil. Fruit and green vegetables are his delight. He does not feel offended at the injunction, "Take a little wine for thy stomach's sake and thine often infirmity." Such are the historic and natural appetites of mankind.

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THE STATUS OF BACTERIAL FOOD POISONING IN THE UNITED STATES

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Read before the Annual Joint Meeting of the Chicago Medical Society and the Chicago Pathological Society, January 16, 1924.

With the growth of scientific knowledge regarding the specific dangers from insufficient and unbalanced diets, and of overconsumption, improper storage and understerilization of foods, attention has been given to the effect of food upon disease and the death rate. Because of the complexity of the problem, there is not to-day a definite and complete understanding as to conditions under which a diagnosis of food poisoning is justified. However, recent epidemiological investigations have shown that the term should probably be limited to the intoxications of *B. botulinus* and the poisonings by food contaminated with the organisms of the paratyphoid-enteritidis group and perhaps other bacteria.

Reliable facts concerning the prevalence of food poisoning in the United States are difficult to obtain since the disease is rarely made reportable. Outbreaks of food poisoning are explosive in character, usually short of duration and frequently disregarded, unless there are spectacular features or the outbreak is botulism, in which case the attention attracted may be out of all proportion to the recorded morbidity and mortality. Illustrative of the latter, was the profound impression created in Great Britain over the first and only outbreak of botulism (Loch Maree) that has been reported there.

The symptomatology of both the types of food poisoning is so distinct that they should be easily recognized and differentiated. The laboratory and investigative procedures are likewise different. With the foregoing statements, the matter is placed in its proper perspective and may be discussed more in detail.

Frequency of botulism.—Botulism is at present and perhaps has always been, a comparatively rare disease in the United States. Lewis[1] and Jellineck[2] reported in 1899 and 1902, respectively, outbreaks of food poisoning which were probably botulism. McCracken[3] reported the first outbreak to be proved toxicologically. Geiger, Meyer and Dickson,[4] in September, 1922, summarized the data available and stated that since 1899 a total of 91 single or group outbreaks have been reported in the United States and Canada. A total of 345 people, with 213 deaths or a case mortality rate of 61.7, was recorded. Only 30 outbreaks of their collected series were proven bacteriologically or toxicologically.

Since the publication of Public Health Bulletin 127, it has been possible to collect data dealing with 38 additional outbreaks, 15 of which have been proven, toxicologically. Of these, 21 occurred in 1922; 10 in 1923; and the remainder in previous years, concerning which information is now available. A total of 92 cases, with 70 deaths, or a case mortality of approximately 87.0, has been recorded. If there is taken a five-year period as from 1918 to 1922 but not including 1923, which is not complete, an average of 15 outbreaks have occurred annually. This probably represents the average yearly occurrence of botulism in the United States. The number of outbreaks occurring in 1922 was the largest number reported (21) in any one year. It must be recognized, however, that food may be somewhat detoxified by heating or

"warming up" just before being consumed and the strength of the toxin so reduced that the mild cases resulting may be overlooked or not diagnosed as botulism. To summarize: there have been reported in the United States from 1899 to date 129 outbreaks, a total of 435 people with 200 deaths, giving a case mortality of 67.1, and of which 45 outbreaks, or approximately one-third, have been proven toxicologically and bacteriologically.

The geographic distribution of the outbreaks occurring in 1922 and 1923 is interesting. Thirty-one outbreaks were reported from western states and two other outbreaks were from food canned in the west. In all the assembled data, there are only three outbreaks reported in southern states, in one of which the food was canned in the west. The following food products were concerned in the various outbreaks of botulism that have been reported in the above periods (1922 and 1923): Home canned string beans, 10; home canned corn, 6; home canned asparagus, 3; home canned spinach, 2; home canned chili sauce, 1; home canned pimento, 1; home canned beef, 1; home canned figs, 1; home canned chicken, 1; commercially canned spinach, 2; commercially canned clam juice, 1; and of the remainder, the causative foods are unknown. The ratio of outbreaks due to home canned foods and those due to commercially canned, was approximately 10 to 1.

The majority of the outbreaks have been due to underheated or underprocessed foods. It is fundamental that methods of canning must insure sufficient heat penetration and make allowance for altitude and the hydrogen-ion concentration of the product. Sanitation by the thorough cleansing, proper storage and the use of fresh products is primarily essential as a protection against botulinus spoilage. There have been no outbreaks of botulism traced to commercially canned food since February, 1922, while there have been in the same period 26 outbreaks attributed to home canned foods. It would appear that the precautions taken by the commercial canning industry have been efficacious.

Frequency of food poisoning probably due to the paratyphoid group.—The U. S. Public Health Service has maintained since January, 1922, a field station for the investigation and study of all outbreaks of food poisoning occurring in the United States. The progress of this investigation may be briefly stated as follows:

It has been possible in some cases to study the records, and in other cases to participate in the investigation of over 800 outbreaks suspected of being food poisoning. These records cover a period of time from 1910 to the present date, one-fourth of which (201) were reported in the period 1922–1924. It should be stated that the diagnosis of "ptomaine poisoning" is being loosely used by various members of the medical profession. Likewise, it can be stated that in over 80 per cent of these investigations, especially in those where it has been possible to reconstruct the histories of the outbreaks, or where subsequent autopsies were performed and investigations made, there were indications of other conditions than food poisoning or that the food primarily blamed was not at fault. On the other hand, investigations have been made, both from an epidemiological and laboratory standpoint, particularly at Rockford, Illinois, and Birmingham, Alabama, in which the causative food was determined and the contaminating organisms, paratyphoid A and B respectively, were isolated. This work, in part, has been reported by Geiger,[5] and the data systematically analyzed.

Distribution of the spore of B. botulinus.—Meyer and Geiger[6] investigated soils in which certain vegetables had been grown which, after canning, had caused outbreaks of botulism in humans. Cultures of these soils were toxic and the toxin thus formed was neutralized by the

corresponding type of botulinus antitoxin. They suggested that possibly the manuring of the soil might be the medium of the pollution of the soil with the spore of B. botulinus. However, Meyer and his associates[7] stated that in over 2,000 samples of soil and other agricultural products in the United States and in other samples from Canada, Alaska, Belgium, Denmark, England, the Netherlands, Switzerland, Hawaiian Islands, and China, that were examined, it was demonstrated that the spores of B. botulinus were widely distributed in nature. There is recent evidence that Alaskan soils which are acid in reaction are singularly free from the spores, at least in certain areas. The spore was found in greatest abundance in uncultivated mountain soils and to the least extent in soils that had been intensively cultivated. Geiger[8] and Geiger and Benson[9] have demonstrated an intensive distribution in certain localities, particularly in the State of Washington. It is of special interest that they were able to demonstrate experimentally that both type A and type B, B. botulinus, may exist in the same soil sample, type A predominating in cultures when vegetables such as corn and string beans were planted together with the soil in the culture medium.

In this connection, in a recent investigation of the geographic area mentioned by Geiger and Benson, there was strong evidence that intensive animal manuring, or soil pollution with animal excreta over a period of years, may affect the type demonstrable in cultures of the soil with the greater likelihood that it would be type B. For instance, it was ascertained that the surface pollution with animal excreta had been constant for many years because of the location of the area examined and its use as a pasture, particularly by horses and cattle. Cultures of soils from this limited area contained toxin of type B, B. botulinus, while cultures of soils from other areas five miles away, and usually from soils of the state as a whole, yielded predominantly type A, B. botulinus.

It is frequently possible to demonstrate the spore of B. botulinus in soil cultures in which vegetables have been grown when the vegetables, after canning, caused outbreaks of the disease in humans. Such results indicate, and the experimental evidence strongly supports the statement, that the spore of B. botulinus is usually present where food supplies are grown and the resulting poisoning outbreaks may be in direct ratio to the distribution and the method of the canning of the food.

Causative agent in botulism.—Orr,[10] and Edmondson, Giltner and Thom[11] found that guinea pigs succumbed to botulism when fed large numbers of toxin-free spores. Coleman and Meyer[12] assert that toxin-free spores may under certain conditions germinate and the vegetative forms multiply and liberate toxin in animals. Geiger[13] states that there is a vast difference in results depending on whether toxin-free spores are fed or inoculated into guinea pigs, even when such spores have been saturated with specific antitoxin and have been incubated. This difference may be quantitative in the case of feeding and on subcutaneous inoculations of the spores. Finally, such spores when fed may remain dormant in the animal body and be recovered from various organs, on autopsy, without the animals showing any previous symptoms of the disease. Geiger, Meyer and Dickson[4] state, however, that the epidemiologic data of the numerous carefully investigated outbreaks of botulism, indicate that the intoxication has always been preceded by the ingestion of toxin-containing preserved food. Furthermore, these writers call attention to four outbreaks in which the toxic food was boiled and later consumed without any illness occurring. Recently Hervey[14] confirmed these observations. Epidemiologically, there is every indication that a true botulism in-

fection never occurs in the human being and the symptoms are due to preformed toxins in the food when the food is ingested. However, Geiger[15] reported that certain experiments indicate the possibility of the absorption of the toxin from mucous surfaces other than the gastro-intestinal tract and from fresh wounds.

Causative agent in food poisoning probably due to the paratyphoid group.—The short incubation period in food poisoning of this type, the early recovery of the persons ill, the low mortality rate, the absence of continued temperatures, or other evidence of infection especially when the food ingested contains living organisms of the paratyphoid group, are suggestive evidence that these outbreaks are also intoxications. Experimentally, the production of poisonous filterable substances by the various strains of the paratyphoid-enteritidis group is extremely variable. Poisonous filterable substances are rarely produced in broth cultures in as short a period as six hours, but cultures may retain the toxicity for as long an incubation period as ten days. It must be appreciated that such results are obtained only on intraperitoneal inoculation of the animals and that feeding experiments with filtrates and cultures are invariably negative. It has been demonstrated that the poisonous filterable substances produced are occasionally thermostabile since they resist boiling at 100° C. for ten-minute periods. However, it is significant that there are no records of such poisonous filterable substances being demonstrated in outbreaks of food poisoning, when the organisms of the paratyphoid-enteritidis group have been isolated from such foods.

Symptoms.—In the majority of cases of botulism, the incubation period is from 24 to 48 hours, though the onset may occur earlier or may be delayed. The earliest onset in the recent outbreaks investigated was 16 hours and the longest 48. It is interesting to note that in one outbreak the amount of toxic food consumed was practically the same, yet there was a difference of 24 hours in the onset of the cases. Gastro-intestinal symptoms are not as rare as is sometimes thought, but are delayed much longer than those observed in outbreaks due to the type of food poisoning caused by the paratyphoid group. In the latter type of food poisoning, the symptoms usually manifest themselves in about two to four hours. The characteristic evidences of the disease recorded in botulism are quoted in their usual order as follows: delayed onset, marked muscular weakness, gastro-intestinal symptoms, disturbances of vision with diplopia and blepharoptosis, loss of ability to swallow and talk, constipation, rapid pulse and subnormal temperature, rarely any pain, death from respiratory failure and a high mortality rate.

As a contrast, we have in the outbreaks due to the paratyphoid group, such characteristic symptoms as follows: sudden onset, nausea, vomiting, abdominal pain, prostration, diarrhea, rise of temperature, and a mortality from 0 to 1 per cent. Therefore, the difference, clinically, between these two types of food poisoning is distinct and should be easily recognized.

The explanation of the symptoms in cases of botulism has been under discussion for several years, and recently Schubel,[16] Dickson and Shevky,[17, 18] and Edmunds and Long[19] have published experimental data which are very interesting. Dickson and Shevky state that: "In botulinus intoxications in cats, dogs, and rabbits there is a specific effect upon the portions of the autonomic nervous system which Gaskell described as the bulbo-sacral and prosomatic outflow of connector fiber respectively, which results in a blocking of the nerve impulses of those nerves. . . . The experiments show, however, that the lesions in these portions of the nervous system are not of central distribution but are peripheral."

These authors further conclude that: "In addition to the effect upon the fibers of the parasympathetic nervous system,

the toxin of clostridium botulinus, types A and B, exerts an influence upon the endings of the motor fibers of the voluntary nervous system which leads to a marked susceptibility to fatigue. There is no effect upon the sensory fibers of the peripheral nerves. The muscle cells of the smooth and striated muscles are not affected."

Edmunds and Long state that: "All the truly characteristic symptoms, however, can be explained by the peripheral motor paralysis. The increasing weakness in the legs, the relaxation of the abdominal wall, the early change in the respiration due to the paralysis of the diaphragm, all have the same origin, and the final failure of the respiration is due to the failure of the nerve endings in the respiratory muscles."

Based on the above findings, Edmunds and Long recommend artificial respiration and the careful administration of physostigmin in treatment. Geiger,[13] however, states that " immobilization and quiet are indicated by the best means available. It is almost unnecessary to call attention to those familiar with the disease in animals to the often observed fact that the merest roughing of the inoculated animal after the disease is manifest, hastens materially the outcome." This clinical observation seems amply supported by Dickson and Shevky[18] in their explanation of the nerve factors involved in the production of many of the early symptoms noted in botulism. They make the definite statement that "All the phenomena may be explained on the basis of susceptibility to fatigue in the nerve endings of the motor fibers which supply the skeletal muscles, etc."

To the above measures suggested in the treatment of botulism must primarily be added the use of specific types of antitoxin. As there seems to be some fixation of the toxin in the body and probably no increase after the poisonous food has been ingested, early administration of the antitoxin is desirable. This is very difficult of application as usually the disease is not recognized within 48 hours after the food has been consumed and this is not unlikely the time limit of the efficiency of the antitoxin. In this connection it is well to mention that type A is by far the most predominant type demonstrable as causing the outbreaks in the United States. Type B is exceedingly rare as a cause of the disease in humans.

Spoilage.—In the majority of outbreaks of botulism, the preserved foods responsible have been noted to be visibly spoiled. This spoilage may be a relative matter as the containers can be normal in appearance and the disintegration of the contents be so slight that no abnormal odor or taste is detected. In the 38 outbreaks of botulism recorded in this study, information as to spoilage is available in 24. Ten of the foods implicated were stated to be normal in odor and taste, and there was nothing unusual in the appearance of the container. In the remainder (14) the preserved food and its containers appeared abnormal, yet it was tasted or served as food. Schoenholz, Esty and Meyer,[20] in an extensive piece of work with canned foods, artificially contaminated with spores of B. botulinus, report that under the conditions of the experiment toxin formation and spoilage were constant in corn, peas, salmon, sweet potatoes and pumpkin; irregular in asparagus, beets, ripe olives, spinach, string beans, evaporated milk, red and green peppers. Toxin without visible spoilage was moderately produced only after prolonged incubation in acid fruits as apricots, cherries, peaches, plums, raspberries, tomatoes and sauer kraut, and then in exceptional cases only. Spoilage is, therefore, a doubtful criterion in botulism and as Geiger[3] has pointed out, this is true also in outbreaks of food poisoning due to the paratyphoid group.

Food supplies.—When the type of food poisoning is recognized as botulism, always suspect preserved foods and meat products such as sausages. In the type

of food poisoning due to the paratyphoid group, always suspect freshly cooked or "warmed over" food, especially if there has been some period of incubation.

Laboratory procedures in botulism.—In outbreaks of botulism, the suspected food is tested for the presence of toxin by animal inoculation using mice, guinea pigs or rabbits. Tests are also made for type by neutralization with specific antitoxin. Cultures of the food to determine the presence of spores can be made, but it is cautioned that toxin must be demonstrated originally to absolutely prove the food as the causative factor.

It has been suggested by Meyer and Geiger[21] that stools of clinical cases be examined for the presence of B. botulinus. This has also been advocated by Hervey.[14] Tanner and Dack[22] have published positive findings of B. botulinus in two out of ten samples of stools of normal persons. The value of these findings, however, has been somewhat counteracted by the data of Geiger, Dickson and Meyer,[4] who state: "That the 50 stool specimens of people who had ingested raw vegetables and fruits purchased in the open market proved negative for B. botulinus, although repeated examinations of the fruits and vegetables these people ate had shown the presence of B. botulinus.

Autopsies.—Dubovsky and Meyer[23] stated that in four cases studied B. botulinus, types B and A, were found in the intestinal contents of the two cases, in the intestinal wall itself, in one case, and from the liver in one case. Recently Geiger isolated B. botulinus, type A, from the stomach wall of a case dying of botulism but not from the stomach contents. Neither the supernatant liquid from the macerated stomach wall nor the stomach contents was originally toxic.

Wilbur and Ophuls,[24] Armstrong, Story and Scott,[25] and Geiger, Meyer and Dickson,[4] discussing the histologic changes found in the cases of botulism noted particularly a characteristic type of thrombus formation in the vessels of the brain. Dickson,[26] however, states that thrombi cannot be considered pathognomonic of botulism. In this connection, Geiger made an investigation of several cases of illness occurring recently in Chicago. On autopsy of one person that died, the anatomical findings and subsequent microscopical examination revealed thrombosis in the brain and other tissue, and a diagnosis of botulism was suggested. It was later proved that these cases were not botulism.

Examination of blood sera.—It has been interesting to note that, occasionally, there is in outbreaks of botulism the history that one person or more after consuming the poisonous food, did not become ill. A search of the records reveals that in 12 outbreaks there were 29 people who supposedly ate the toxic food and were not affected. Aside from the possible mistake of the records because usually the morbidity incidence in outbreaks is 100 per cent, several explanations have been offered for this phenomenon, namely, either there may be a greater concentration of toxin in some parts of the preserved food in the container than in others, or there may be some immunity to the intoxication, or perhaps only one can of several that were served, was toxic. The latter explanation is very likely true in three of the above outbreaks recorded, but in a recent outbreak in the State of Washington the epidemiologic and toxicologic evidence was such that the occurrence deserves detailed description.

Four persons, three men and one girl, were served a string bean salad from a quart glass jar. The vegetables had been home canned on the ranch by the "cold pack" method. The taste, odor and appearance were stated to have been normal, but the girl insisted that she only consumed about "one or two tablespoonfuls." The men all consumed about one-half pint each of the string beans and subsequently developed symptoms of botu-

lism and died. The girl has remained well. The beans were later proved to contain botulinus toxin together with several other jars of this vegetable of the same pack. All cultures of soil submitted from this ranch, 10 in number, were proved to contain botulinus toxin, type A. A blood serum specimen was obtained from the girl three weeks after the outbreak had occurred for the purpose of testing it for any antitoxin to account for her seeming immunity to botulism. This was tested together with the sera of nine normal persons, three of whom have been doing research work in botulism for four, two and one years, respectively.

It is of interest that apparently there was some slight protection against the toxin of B. botulinus, type A, in the girl's blood serum as it protected white mice against four m.l.d.'s of toxin. The sera of the nine normals did not protect against the same amount of toxin. All sera, however, including the girl's serum, did not protect against 50 and 400 m.l.d.'s for mice of either type A or B, B. botulinus. The only conclusion that can be drawn from this one small experiment, is that there were no protective substances of sufficient strength in the blood sera of the persons tested to neutralize the strength of toxin which is usually present in the poisonous food concerned in outbreaks of botulism.

Laboratory procedures, food poisoning, due to paratyphoid group.—In outbreaks of food poisoning due to the contamination of the food with the organisms of the paratyphoid group, every effort should be made to demonstrate the presence of filterable toxic substances in the causative food. In any event, bacteriologic examination of the food and excreta of the persons ill should be made. It is desired to point out that the stools should be examined as early as possible as negative results will probably be obtained if such examinations are not made within 48 hours after the ingestion of the food.

It has been suggested that tests be made of the blood sera of persons ill in outbreaks of food poisoning due to the paratyphoid groups for the presence of agglutinins. The results so far obtained are inconclusive and of doubtful value, because of the many contributory and dependent factors in this test, such as previous vaccination with triple typhoid vaccine, the negative bacteriologic findings of a specific organism in the suspected food, the comparatively short duration of illness, the coagglutinins demonstrable among the members of the paratyphoid group and the absence of definite information as to such reaction in the normal individual.

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THE POSSIBLE DANGER OF ABSORPTION OF TOXIN OF B. BOTULINUS THROUGH FRESH WOUNDS AND FROM MUCOUS SURFACES

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THERE have been recently investigated two outbreaks of botulism, in one of which, due to home canned asparagus, occurring in Salt Lake City, Utah, the housewife stated she merely placed some of the liquor of the canned vegetable on the tongue. Because of the resulting burning sensation the tongue and mouth were immediately washed with water and an alcoholic toilet water. Symptoms of botulism occurred in 36 hours and death in four days.

In the other outbreak at Hailey, Idaho, in which home canned corn was involved, the housewife stated that she crushed two or three grains between the teeth to test the quality but did not swallow any of the material. Symptoms of botulism occurred in 48 hours and death in eight days. Both foods were proved to contain a toxin of B. botulinus, type A.

There are on record many instances[1] in which it is stated the foods were only tasted, but in the above outbreaks we have the only reliable records of symptoms and death occurring from botulism by apparently rapid absorption rather than from the ingestion of the toxic food.

An effort was made to test on guinea pigs this interesting epidemiological possibility. There were fortunately available from the Ismay, Montana, and the Okanogan, Washington, outbreaks, home canned corn and string beans, respectively. Both foods had been proved to contain a toxin of B. botulinus, type A; m.l.d. for mice, 1/100,000 c.c.

The various methods of preparation of the experimental animals were as follows:

1. Shaved area, approximately one inch square, on abdomen. Skin area was reddened and bleeding in places.

2. Shaved area, approximately one inch square, on abdomen. Three linear incisions made just through skin.

3. Shaved area, approximately one inch square, on abdomen. Small skin pocket made in center of area.

4. Hair on abdomen plucked out, area approximately one inch square.

5. Vaginal swabbings.

6. Uninjured and normal skin area, hair intact.

All animals were used in duplicate with both the corn and string beans except in experiments number 4, 5, and 6, when sets of six animals were inoculated. The material was vigorously applied except in experiments 3, 5, and 6 with sterile cotton swabs previously dipped and thoroughly moistened with the toxic foods. The injured skin areas were first washed with 95 per cent alcohol, allowed to dry before and after application of the toxic material. In each experiment, control animals in duplicate were inoculated subcutaneously with 2 c.c. botulinus antitoxin, type A, testing 400 units per c.c. The control animals remained well.

Autopsies were made on three animals. Two were from experiment 4, and one from 5. The autopsied animals were etherized before death, bled from the heart and sodium citrate solution added. One c.c. of this citrated heart blood was inoculated intraperitoneally into mice in duplicate, to test the presence of toxin in the circulating blood, with negative results. Enrichment cultures in beef heart media were incubated and stained smears and agar shake cultures made from those

1. Public Health Bulletin 127.

gave positive results from the animals in experiment 4, for B. botulinus, type A, from the following organs: liver, kidney and mesenteric lymph nodes; spleen, brain, bone marrow and citrated heart blood were negative. Cultures from the animal in experiment 5 were negative for B. botulinus even from the uterus and its appendages.

RESULTS

Every animal died in experiments 1, 2, 3, 4, and 5, with typical symptoms of botulism, except those protected with antitoxin. All animals remained well in experiment 6.

CONCLUSION

The absorption of B. botulinus toxin does not occur on the unbroken skin. The absorption of botulinus toxin is probably not limited to any particular or specific portion of the gastro-intestinal tract, but may occur on or from any mucous surfaces, broken skin areas, or fresh wounds. Therefore extreme care should always be taken in handling suspected contaminated packs of food, though it is fully recognized and appreciated that from the epidemiology of the majority of the botulism outbreaks that have occurred, this is a remote possibility.

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DISEASES OF THE PRESSERS

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I.

PRESSERS are not tailors. They are not needle workers. They have nothing to do with the sewing of garments. Their work is a branch of the garment industry. It consists in the pressing of ready garments with hot irons to put them in shape.

Pressing is a less skillful trade than tailoring. It does not require so long an apprenticeship. It can be learned in a comparatively short time. The pressing trade is filled by persons who usually have followed another trade. It is mostly recruited from the adult immigrant population, brought up in various other occupations, which it was, for some reason or other, impossible to follow in the new country. Pressing requires greater muscular effort than sewing at machines. Pressers are therefore selected from a more robust class.

There are very few women in the trade. Only in pressing of lighter garments, such as silk waists and dresses, do women work as pressers.

Tailors sit at their work, pressers always stand. They lift heavy irons weighing from twelve to twenty pounds. In hand pressing, the worker lifts the hand iron and puts it down with considerable force upon the slightly moistened garment. In raising his right arm he bends towards the left side.

The irons are heated by electricity or illuminating gas. In olden times the irons were heated directly by coal burning within the hollowed iron. Later this was substituted by heating the irons by coal or gas in special ovens placed near the pressers. At present in the women's garment trade, there are but three methods of heating. The most modern one is by electricity. This is more frequently used in the dress and waist industry. It is claimed that for heavier cloth and garments electric heating is not appropriate. The usual methods of heating irons in the trade is by illuminating

gas combined with compressed air. Lately in the men's garment trade as well as in the women's garment trade there have been introduced steam ironing machines of large calibre, doing much more rapid although not so careful work as hand pressing.

There is very little or no dust in pressing garments for these are always slightly moistened. Conditions of light and illumination are not usually very good in the places where pressers work. As a rule, pressers are placed at some distance from windows, which are needed for the machine operators requiring closer eye work. The pressing tables are usually partitioned off and artificial illumination is used throughout the whole day except in those shops where there are special skylights or other provisions made for natural light. The sanitary conditions under which pressers work do not greatly differ from those prevailing among the shops in the industry.

There is considerable heat and much humidity evolved in the work of pressing. During the summer there is always a difference of between four to ten degrees in the temperature where the pressers work from the rest of the shop. The humidity is also high because of the steam and the moisture produced by the bunsen burners. Previous investigations by the U. S. Public Health Service have shown that there is considerable carbon-monoxide in the air near pressing tables. This is due to the process of combustion as well as to direct leakage of illuminating gas from the rubber pipes and connections.

Theoretically, health conditions among pressers should be good in view of the fact that they are selected from a specially robust and healthy part of the working population. As a matter of fact, health conditions among pressers are not very good. This has been shown in previous investigations by the author, by Schereschewsky of the U. S. Public Health Service and Landis of the Henry Phipps Institute. My own investigations were made in 1912 and were based on the examination of 80 pressers out of 800 garment workers examined. The investigation by Landis was based on the examination of 108 pressers. The most thorough examination was made by Schereschewsky and was based upon the physical examination of 720 pressers.

For the past ten years I have had special opportunities to observe health conditions among pressers. In 1913, Local 35 of the International Ladies Garment Workers' Union introduced certain benefits which were paid to those members who were disabled by acute disease or by pulmonary tuberculosis. The medical certification for these benefits were made by myself and my associates in the Joint Board of Sanitary Control and during the last few years by the Union Health Center.

Local 35 is the branch of the women's garment workers which is composed exclusively of pressers. The Local has from 5,500 to 6,000 members, all male, and about 90 per cent or more of them married. About 15 per cent of the members are Italians, about 5 per cent Slavs, and the rest are Russian or Galician Jews.

Practically all pressers are week workers and have been so for the last ten or twelve years. They live in the East Side, Bronx and Brooklyn tenement districts. Their weekly wages at present amount to about $40 to $50 per week, with an average of about forty weeks work during the year.

The benefits given by Local 35 to its members consist in a cash payment of $7 per week to those who are disabled by disease for a period of one to ten weeks. They also spend from $250 to $600 for each member who is found to be suffering from pulmonary tuberculosis.

The following data on the operation of the sick and tuberculosis benefits in the Local will be of interest as bearing upon the health and disease conditions among the pressers.

II.

SICK BENEFIT

The sick benefit of Local 35 was established in 1914. By the end of 1922 there were 2,246 cases of sickness to which benefit was paid, and 2,800 applicants for the benefit (the Local paid sick benefit only for the period after the first week of sickness, and, moreover, a number of applicants for sick benefit were denied by the physician for various causes).

The total number of weeks for which benefit was paid was 10,201, an average of 4 3/5 weeks per each case. Altogether, the Local paid out in sick benefit $63,834.57, of which $58,197 was paid in cash to sick members and $5,637.57 was spent for medical relief. The average cost for cash benefit for each case was $25.92; the average cost of medical relief $2.50; and the total cost for each case was $28.42.

Beginning with 1915, when the benefit was fully established, the number of cases ranged from 249 to 313 per year, which, with a membership of 5,000 entitled to benefit, meant from 4.9 to 6.2 per cent of the membership per annum.

According to ages there were only 2 per cent of the patients under the age of twenty-four, 20.61 per cent from twenty-five to thirty-four; 48.86 per cent from thirty-five to forty-four; 25.83 per cent from forty-five to fifty-four; and 7.70 per cent, fifty-five and over.

In 393 cases no benefit was given by the certifying physician for various reasons, the chief of which was that there was no disability. Cash benefits were paid only to members who were sick with a disabling disease. Thus, a person whose fingers of the right hand were injured, would get benefit, while a person whose fingers of the left hand were injured, would not always be considered as entitled to benefit.

As to duration of sickness, of the 2,246 cases to which benefit was paid, only in 19 per cent were they sick fully 10 weeks; in 30 per cent of the cases the sickness lasted from 4 to 9 weeks; in 11 per cent of the cases, benefits were paid for 3 weeks; in 16 per cent for 2 weeks; and in 24 per cent for 1 week.

TUBERCULOSIS BENEFIT

There were examined during the last ten years, 206 cases of pulmonary tuberculosis. The following are their ages: 7.29 per cent under twenty-four; 32.04 per cent from twenty-five to thirty-four; 41.25 per cent from thirty-five to forty-four; 14.08 per cent from forty-five to fifty-four and 5.34 per cent fifty-five and over.

The total number of persons suffering from tuberculosis, to whom Local 35 paid benefit was 129. The difference between this and the 206 cases examined by us is due to the fact that a number of persons were not entitled to benefit for the reason that they were members for less than six months, or for other reasons.

The ages of the 129 benefit tubercular cases were as follows: one between twenty and twenty-four; 47 from twenty-five to thirty-four; 58 from thirty-five to forty-four; 18 from forty-five to fifty-four; and 5, fifty-five and over.

According to their family relations, the 129 cases were classified as follows: 6 unmarried; 123 married; 20 with 1 child; 23 with 2 children; 43 with 3 children; 18 with 4 children; 10 with 5 children; 7 with 6 children; 1 with 7 children; and 1 with 8 children.

The number of cases according to each year since tuberculosis benefit was paid differs very greatly. Thus in 1913 there were 28; 1914, 30; 1915, 14; 1916, 11; 1917, 13; 1918, 6; 1919, 10; 1920, 6; 1921, 8; and 1922, 3, an average of 13 cases per year. During the last few years the incidence of tuberculosis has greatly decreased. Moreover, owing to the general examination of most of the members of the Local, there were since 1918 comparatively few new cases of pulmonary tuberculosis.

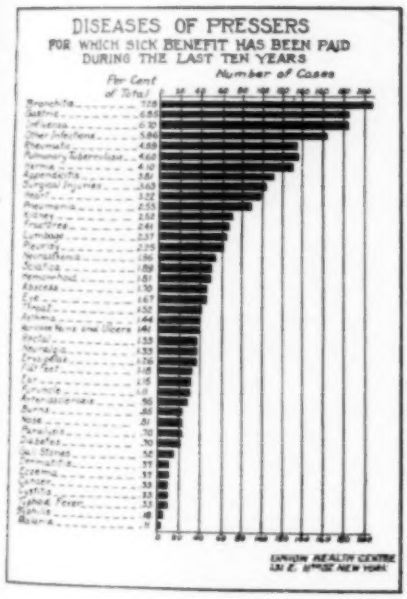
During the ten years, about $20,000 was paid for cash benefits to the tubercular members.

Of the 129 cases to whom benefit was given, 72 were sent to special boarding-houses at Liberty, 53 received cash settlements; while in 4 cases other settlements have been made.

The following table gives the final disposition of the tuberculosis cases:

Recovered (back at work)	48
Left New York	19
Went to Europe	8
Died	8
Went to other trade	1
No record	45

The accompanying graphic table gives the percentages of diseases for which benefit was paid:



III

SUMMARY

Pressers should not be classified as tailors, from whom they differ in the trade process, in the tools employed, posture assumed, etc.

Pressers are selected from a more robust and healthy class of population than tailors. They are also less skilled workers than tailors.

The special hazard of the presser's occupation is due to the heat and humidity caused by hot irons, the carbon-monoxide and other deleterious gases evolved from the process of combustion and leakage of pipes, the constant standing and the lifting of heavy irons.

The general examination of 9,938 pressers admitted to the Union during the last ten years does not show any worse health conditions than in the other branches of the garment trade. On the whole, their health conditions seem to be rather better.

The sick benefit cases during the last nine years show that only a little more than 5 per cent of the members have resorted to the Union for payment of benefits for sickness lasting longer than one week.

The five thousand beneficial members of the Local had in all a little more than 1,100 weeks average yearly sick benefit given. To these must be added about 309 weeks for which benefit was not paid, being the first week of sickness. This would bring the total number of weeks to about 1,400 or 1,500, which is much less than the nine days shown by Sydenstricker to be the average sickness per annum among workmen.

Among the diseases for which most of the sick benefits were paid stand, in the first rank, bronchitis with 7.28 per cent, gastric ailments with 6.85 per cent; influenza with 6.70 per cent, infections with 5.96 per cent, and rheumatic diseases with 4.89 per cent. The large number of bronchitis cases tends to show the hazard of the pressing trade, the too great heat and humidity and the consequent colds to which pressers are subject owing to the sudden changes from the heated atmosphere near their work to the much cooler atmosphere in the other parts of the shop and outside.

Our records show that sick benefit was paid to only 1.96 per cent for neurasthenia, while the U. S. Public Health Service has shown 10 per cent of the pressers suffering from neurasthenia. Benefits were, however, paid only to those who were totally disabled and who were actually bed patients. The same may be referred also to defective vision and eye diseases, which in our cases amounted to only 1.76 per cent. According to Schereschewsky there was general de-defective vision in 68.2 per cent of cases. We found no such eye defects as those which Landis reported among pressers.

About 10 per cent of cases suffered from rheumatic and neuralgic diseases. Whether this condition has to do with the heat and humidity to which the pressers are exposed is an interesting question.

In Schereschewsky's investigation the tuberculosis rate was somewhat higher than among garment workers generally. Landis' figures point to a still higher rate of tuberculosis. Our records show a small tuberculosis rate. The present rate is somewhere around 1 per cent, according to examination of candidates, although pulmonary tuberculosis presents 4.68 per cent of all the diseases for which benefit was paid.

The present report is but a preliminary study of the data obtained by us, especially with reference to tuberculosis among pressers, and a further analysis of our records will be made in the near future.

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AN INTERESTING CASE OF CARBON MONOXIDE POISONING

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A VERY interesting case of carbon monoxide poisoning recently came under the writer's observation and some important data which may prove of value to health officers and others interested were obtained.

The case in question had to do with illuminating gas containing a mixture of coal and water gas, and was caused, as nearly as can be determined, by the covering over with earth of the vent pipe leading to the outside of the building from the safety valve on the gas line. The odor of gas was noticeable in late fall and the early part of winter, but no ill effects were apparent. On December 21, 1923, the family closed the house for the holidays and did not occupy it again until January 13, 1924, a period of twenty-three days. During this time the weather became much colder and the ground was frozen on the outside around the vent pipe leading from the safety valve.

The family, consisting of husband, wife and five-months-old baby, arrived home about 6:10 P.M. and noticing the odor of gas opened the door. The man then went to the basement and built a fire in the furnace and kindled a fire in the fireplace. The strong odor of gas being less noticeable the door was then closed. As the house grew warmer, the family began to feel sleepy and by 6:25 P.M. the husband and baby were in a state of partial coma. The wife was in another part of the house, where the concentration of gas was less, and, noticing the condition of the husband and baby, was able to open two windows, pick up the child and go as far as the door when she became unconscious. A neighbor noticing her fall came to the rescue.

The more common characteristic symptoms of carbon monoxide poisoning present were blurred vision, severe headache, slight nausea, extreme exhaustion, sleepiness and, in the case of the man, weakness in the legs. The man was giving a telephone message when overcome and said he thought he could never get it finished; "it seemed to take ages."

No leaks could be found in the piping inside the house except a defective safety valve which functioned without serious consequences as long as the gas could escape through the vent pipe into the unfrozen ground. However, as soon as the ground became frozen so that the gas could not escape through the vent pipe it was forced back into the house through the safety valve. During the twenty-three days' absence of the occupants the walls, rugs, upholstered furniture, bed clothes, etc., had absorbed the gas and when the house was heated the gas was given off in sufficient quantities to cause asphyxiation.

To get rid of the gas the house was heated and the doors and windows opened at one-hour intervals for twenty-four hours. An electric fan was also installed to help ventilate the house. All bedding, clothing, mattresses, rugs, etc., were aired out of doors for two days. At the end of this period white mice were brought in cages and allowed to remain over night. One was partially covered with the bedding and was in a state of coma the next morning. Two were bled and a spectroscopic analysis was made. The characteristic carbon-monoxide hemoglobin absorption bands were found in both cases. The occupants slept in the house the third night after their return without any ill effects other than a dull headache. The odor of gas remained for a week and caused a burning sensation of the eyes and slight headache to one just entering the house from the fresh air. The symptoms of gas poisoning were particularly evident for three or four days after the attack. There was a fluctuation in body temperature, exhaustion, a burning effect in the lungs, and the victims were easily chilled.

The author wishes to acknowledge his indebtedness to Dr. W. L. Chandler for his assistance in helping to make the spectroscopic analysis and his keen interest in the case.

CONCLUSIONS

1. Vent pipe openings leading from the safety valve on gas piping should never be covered with earth, since freezing may prevent the free escape of gas.

2. Rugs, bedding, upholstered furniture, etc., are capable of absorbing sufficient quantities of illuminating gas to cause carbon monoxide poisoning.

3. Any furnished house vacated for any period of time where the odor of gas is perceptible should first be aired thoroughly, preferably for a day or more to drive out the gas from the furnishings, then fires built and the airing continued until tests show the absence of carbon monoxide.

4. Chemical or physiological tests, or both, should be made by a person competent to perform them before such a house should be reoccupied.

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INVESTIGATION OF THE HAZARDS FROM THE USE OF MANUFACTURED GAS IN BALTIMORE*

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AND

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DURING the past two years there has been a considerable increase in the number of fatalities attributable to the use of manufactured gas. These accidents have not been restricted to any one section of the country but have been rather generally distributed throughout the East, the Middle West and the South. The frequency of these accidents has aroused considerable alarm and has occasioned investigations and attempts to control the situation by regulations providing for the proper method of using gas fuel.

It was recognized by those familiar with problems of gas distribution that as a result of the general coal shortage during last fall, the use of gas for heating would probably increase tremendously, and numerous warnings were sent out regarding precautions that should be observed by the public. Records of the Public Service Commission of Maryland show that during the period covered by this investigation there has been an increase in consumption of 15.5 per cent over that for the same period of last year while the number of consumers has increased only 4.2 per cent over the same period. It was very clear that most of this increase in consumption was used for heating, and it would be quite logical to draw the conclusion that the increase in accidents in Baltimore could be attributed to the similar causes that had given rise to such accidents in other places. There had been some changes, however, in the conditions of gas supply in Baltimore since the introduction of coke-oven gas, and the public had been of the opinion that there was some relation between the accidents and the quality of the gas or the conditions under which it was supplied.

Arrangements were made with the police force and the first-aid service of the local gas company whereby the health department was notified immediately of all cases of asphyxiation to the end that our workers could proceed to the scene at once to study the conditions which actually obtained at the time of accident.

On practically every one of these cases a direct study of the local conditions was made. In those few cases which were not so visited, the records of the first-aid crew of the gas company were obtained. In many of the cases a detailed scientific study of the questions involved was made which necessitated experiments in the laboratory and gas chamber. These studies covered a period from January 1 to April 22, 1923, and included 145 cases, listed as follows:

Month	Suicide		Appliances		Piping		Tubing		Accident		Uncertain		Coal Gas	
	F.†	N.F.†	F.	N.F.	F.	N.F.	F.	N.F.	F.	N.F.	F.	N.F.	F.	N.F.
January	8	5	1	13	0	10	1	0	0	3	0	0	0	4
February	8	2	1	12	0	4	1	2	1	3	1	0	0	8
March	2	8	0	15	0	1	0	3	0	4	0	0	0	0
April	2	0	0	7	0	2	2	0	0	0	2	3	0	6
	20	15	2	47	0	17	4	5	1	10	3	3	0	18
		35		49		17		9		11		6		18

Total—145.

† F.—Fatal. N.F.—Nonfatal.

* Collaborators in this work were W. M. Berry and I. V. Brumbaugh, U. S. Bureau of Standards, the Consolidated Gas, Electric Light and Power Co. of Baltimore; Dr. R. R. Sayers, Chief Surgeon, U. S. Bureau of Mines, Surgeon U. S. P. H. S.; S. A. Covell, Public Service Commission of Maryland, and Earl S. Bishop, Baltimore City Health Department.

Suicides.—To designate a case as suicide is usually a simple matter as is evident in such cases where a person was found in a gas-filled room with all openings carefully closed and either gas cocks open or a gas tube in the mouth. Often previous attempts at suicide were on record. In some instances, however, circumstances were noted which at first were attributed to suicide but upon further investigation made the possibility of suicide highly problematical, in some cases highly improbable.

Appliances.—The greatest number of accidents was due to the use of faulty gas appliances, particularly radiant heaters, hot water heaters and cooking stoves. There were a few instances of poisoning in industrial establishments which used gas for heating large units. The appliance was studied under similar conditions to those present at the time of the accident and the products of combustion were analyzed.

Piping.—This comprised such items as street leaks, condensation in pipes and leaking fixtures.

Tubing.—All kinds and conditions of gas tubing were found in use by the public. The cheaper grades of tubing were commonly used, few of which conformed to the specifications of the American Gas Association.

Accidents.—Under this designation were included a large number of cases due to causes other than those mentioned above. A few of these were the extinguishing of a flame by boiling coffee, the opening of loose cocks, fainting at the time of turning on gas, turning the wrong key on a double bracket, use as a partial anesthetic, opening of cocks by children in play and extinguishing of the flame by the wind.

Uncertain.—The cause of these accidents could not be determined. The circumstances pointed against suicide.

Coal Gas.—Although this gas might at first be considered as extraneous to the general purpose of this investigation, poisoning by coal gas is primarily due to carbon monoxide. Three instances were encountered of such poisoning which involved several persons in each case. Two of these instances were caused by hot air furnaces and one by an ordinary coal stove. In each of these the draft had been closed either by turning the damper too far or from accumulations of soot.

PURPOSE OF INVESTIGATION

It was evident from the above table that the greater number of accidents was related to the use of appliances, many of which were apparently operated under unfavorable conditions. It was true that appliances had been used for many years without any apparent public hazard but recent publications had pointed out that certain types of burners could under some conditions produce carbon monoxide. Furthermore, the public entertained a hazy idea that the gas used was of an inferior quality and that because of this more accidents were occurring.

With the increased notice which such accidents entailed, came a greater interest in the medical treatment of cases of poisoning. Uncertain diagnosis, difficulty in determining the cause of death, lack of knowledge of most suitable treatment, and the perplexing character of many physiological factors called for a careful medical study. In addition a survey of all accidents due to gas poisoning was necessary together with a study of the symptoms produced, both acute and delayed.

GAS SERVICE

Effect of Variations in Composition of Gas Upon Performance of Appliances.—The gas supplied to Baltimore consists mainly of hydrogen, methane, carbon monoxide and nitrogen, with smaller amounts of carbon dioxide, so-called illuminants, and traces of compounds of sulphur and nitrogen. Carbon monoxide is a common constituent of manufactured gas and when burned under proper con-

ditions produces a nonpoisonous product. It is one of the most useful of the heat producing constituents and its presence in raw gas in no way increases the hazard from the products of combustion.

There is some seasonal variation in the percentage of the different constituents of the gas. This is due mainly to the variation in the relative quantities of coke-oven gas received as a by-product from a nearby steel plant and water gas from the gas plant. However, this variation in composition does not change the air requirements of the mixed gas and therefore the varying chemical composition *per se* of the gas makes no change necessary in the air shutter adjustment, for the reason that the amount of oxygen required to completely burn it remains constant. There is no reason to believe that this mixed gas with its larger percentage of carbon monoxide is likely to produce any more of this latter constituent in the products of its combustion than the straight coke-oven gas. Large quantities of carbon monoxide may be found in the products of incomplete combustion of fuels which contain no carbon monoxide, such, for example, as natural gas. Observations of both a technical and a practical nature lead to the conclusion that such changes as have occurred in composition of gas would not lead to maladjustment of the appliances which burn it.

Effects of Variations of Specific Gravity Upon the Performance of Appliances.—The daily or weekly variations in the specific gravity of the gas in Baltimore are very small. The seasonal variations are somewhat greater. Gas lights with mantles, radiant heaters, and other types of appliances that require a rather large amount of primary air have been found to be more affected by changes in the gravity than the top burners on a gas range and others which are usually adjusted to a softer flame.

The variation in the gravity of the gas changes the volume of gas that flows into the gas burner through the gas orifice, and also changes the air-injecting power of the gas stream. An appliance adjusted for a coke-oven gas gives a smaller and a harder flame with water gas, due partly to the lesser number of heat units that are being consumed and partly to the higher air injection which results in a harder flame. The tendency for the flame to flash back into the air mixer is greater in the latter case but it is doubtful, however, whether any accidents have ever occurred from this cause, since the noise produced by the flame and the very vile odor which is usually produced under such conditions give warning that the appliance is not operating properly. If the appliance is adjusted for the heavier gas, it gives a larger and softer flame with the lighter gas. In water heaters and radiant type heaters this might result in a little too much gas and it would be necessary to reduce the volume at the gas cock. Variation in the specific gravity makes it necessary to give the appliances a little more attention, but the variation in specific gravity is not sufficient to introduce any appreciable hazard due to appliances becoming out of adjustment.

Effects of Variation of BTU on Performance of Appliances.—Uniformity in heating value is generally recognized as of very great importance in good service and many of the recent state standards specify that the variation must not be more than 30 BTU above or below the standard. In Baltimore, the allowable variation is even less, namely, from 490 to 520. Variations in heating value, as variations in pressure and gravity, are of more importance in some types of appliances than others. Where appliances are adjusted to a very hard flame a small reduction in heating value may cause them to flash back into the burner. Where the appliance is adjusted to a comparatively soft flame, an increase in heating value results in a still softer flame with more chance of the formation of carbon monoxide.

The records of the Public Service Com-

mission of Maryland showed, however, that the variations in heating value have been remarkably small and should not have affected the quality of the service or introduced any hazard.

Effect of Pressure Upon Performance of Appliances.—The pressure at which gas is supplied to the user is, with the possible exception of heating value, the most important factor determining the quality of the service rendered. Correct and uniform pressure is of even greater importance than is usually recognized; in fact, reports of "poor gas," "low heating value," and "faulty appliances," are very often found upon investigation to be really caused by poor pressure conditions, generally due to the local condition of the house piping or appliances or both.

For ideal conditions the pressure should be exactly the same at all times; but this is, of course, impracticable, as there are always large variations in the amount of gas used, and these give rise to variations in pressure. The Public Service Commission of Maryland has established two inches as the minimum pressure and six inches as the maximum pressure for the city of Baltimore. However, the variations in pressure must not exceed 100 per cent of the minimum pressure in that district.

Variations in pressure are not serious in many types of appliances, such as the top burners of a gas range where the gas volume is frequently adjusted for the requirements of cooking. It becomes more serious, however, in water heaters and radiant heaters where the gas consumption of the heaters must be below a certain value in order to secure complete combustion. It is especially important where the products from these appliances are allowed to escape into the room. The gas fitter in making adjustments of these appliances should be very careful to see that with the maximum pressure in that locality the gas consumption is not liable ever to exceed the capacity of the appliance.

General Service Conditions.—Cases have been observed where the gas flame in both lighting and cooking had gradually diminished and become extinguished. Pursuant to the delay attendant upon closing the cock, securing a match, and again igniting the gas, the flame burned at first satisfactorily but soon again went out. Such difficulties were caused by obstructions in the gas lines, either by rust or other foreign substances, or by a meter out of adjustment. Condensation in the line caused a flame to flicker and even become extinguished. If the cock is not closed at once, escaping gas may produce an accident.

Appliances.—A great factor in the use of gas which may present a hazard and against which the public has no means of protection is the matter of faulty design and installation of gas-burning appliances. Studies in the course of this investigation as well as those cited in recent literature clearly indicated the seriousness of this matter, particularly with reference to room heaters.

In a number of appliances designed for a luminous flame it was found that no adjustment was necessary to insure satisfactory combustion for the reason that all of the oxygen necessary to support combustion was drawn in from the air which freely circulated all about the flame. In the Bunsen flame, oxygen as primary air must be drawn into the gas stream within the burner and, furthermore, as secondary air, must be freely supplied to the air-gas mixture during burning. Just to the extent that a proper ratio of either primary or secondary air was precluded on account of any of several factors entering into the design of the appliance, varying amounts of deleterious products of combustion were formed. In fact, carbon monoxide was always formed when manufactured gas was burned under conditions which allowed an insufficient quantity of oxygen to completely burn it. Often odorous constituents accompanied such products

and served as a warning to the consumer that a dangerous condition existed, but there were times when such warning did not occur or was not observed by the consumer. If the room was well ventilated, the toxic products exerted no noticeable effect, but in some cases where ventilation was at a minimum the toxic products built up to a concentration which became dangerous.

Some appliances for burning non-luminous flames were so designed that they did not perform satisfactorily over comparatively narrow limits of variability in the gas supply. The factors of the rate of consumption of gas in cubic feet, the pressure, and as discussed above, to a lesser extent, the BTU and the specific gravity, were so correlated that the changing of one at times greatly affected the over-all performance. Accordingly, the attempt of persons not skilled in the technology of burner design and operation to install or change the character of the flame in an attempt to "adjust" it or, as is often the case, to "save the heat," was fraught with danger and great hazard. Many lives have paid the toll of such well-intentioned but misdirected efforts.

Several makes of so-called solid tops for placing on a gas range to simulate the top of a coal stove have been tested with various appliances and in certain instances were found to produce excessive amounts of carbon monoxide. Other makes of solid tops or solid top stoves properly designed, likewise tested did not produce this gas.

Some appliances (gas ranges and water heaters) were operated under various pressure conditions, varying from two to eight inches, with no apparent change in their performance. It was found, however, that an appliance which had been either designed or installed in a faulty manner and whose range of safe performance was thus rendered smaller than the range of operating conditions presented a serious hazard. Persons with some mechanical ability have attempted to install gas appliances, design equipment, or manufacture some homemade contrivance to economize in the use of gas and have suffered from the results of lack of knowledge of these involved subjects.

Tests were made which indicate that proper venting of gas appliances by which the products of combustion were carried off through a flue was an effective remedy for ovens and water heaters which were producers of carbon monoxide. Top burners of gas ranges were not so greatly influenced by such a vent unless a hood was placed over the appliance. Many cities have enacted ordinances requiring such equipment to be directly connected to the flue.

Another cause which contributes to a diminished oxygen supply and its parallel hazard of a retardation in the escape of the products of combustion is a restriction placed in the flue or vent of gas-consuming appliances. Such a device purports to increase the efficiency and improve the general performance of the gas-burning appliance, but as a matter of fact, under certain conditions, it converts a safe appliance into an extremely hazardous one. A dirty burner is also a very potent hazard. Imperfectly designed burners located too close to cooking utensils are other sources of similar trouble.

Thus the hazards from the production of carbon monoxide were engendered by faulty installations, wrong designs, dirt, certain makes of solid tops, flue obstructions, maladjusted burners and other devices which precluded a proper aeration of the flame.

GAS TUBING

Authorities about the country have long recognized that much of the gas tubing offered on the market presents a distinct hazard. Findings in Baltimore confirmed this idea. Some tubing was of high grade and exhibited intelligence and skill in workmanship, but other samples were almost unbelievably hazardous, consisting of nothing more than a little paper

wrapped over a thin wire spiral, painted with shellac and covered with a cheap cloth. One would suppose that the public would smell the gas and discard the faulty tubing, but it was found that many persons apparently did not recognize the hazard. Instances were found where an attempt was made to stop a leak by adhesive tape or even by rags.

MEDICAL WORK

During this investigation of local conditions ninety-five cases of carbon monoxide poisoning were identified and studied from a medical viewpoint. The toxic action of carbon monoxide is due to its combining with the hemoglobin of the blood and thereby depriving the tissues of their oxygen supply. The degree of poisoning depends upon the percentage of blood saturation with carbon monoxide. There were twelve fatal cases, fourteen severe cases where unconsciousness developed and sixty-nine less serious cases.

All of the cases were early and accurately diagnosed by means of the pyrotannic acid method of carbon monoxide identification developed by Sayers and Yant.[1] This method of determining the amount of carbon monoxide in the blood was found to be simple, rapid and accurate and to be of great practical value for field and hospital use. The degree of saturation of the blood with CO was determined in each case and found to parallel typical CO poisoning.

The symptoms of intoxication by carbon monoxide varied with the degree of poisoning. In cases of slight poisoning, involving 20 to 30 per cent blood saturation, there was headache, frontal in character, sometimes dizziness, and often nausea. A feeling of depression was complained of by a number of cases. These symptoms were accentuated by exertion. In moderate poisoning, involving 30 to 50 per cent blood saturation, the headache became basal in character and dizziness and general weakness developed. In higher concentration, namely, 50 to 80 per cent blood saturation, fainting and prolonged unconsciousness developed. Respiration became deeper and more rapid until near death, when it became irregular and shallow. The heart beat became rapid and weak. Death was apparently due to respiratory paralysis and cardiac failure. There was no evidence of a struggle. In nine of the twelve fatal cases, the blood saturation was over 80 per cent. In the fourteen severe cases it was between 50 and 80 per cent in twelve cases, and in the two most severe cases the saturation of the blood with carbon monoxide was over 80 per cent, an amount which usually causes death. In these individuals, when the blood was practically clear of carbon monoxide, consciousness had not returned, a condition which indicated brain injury.

These cases of carbon monoxide poisoning were studied with a view to further development of rational treatment. From these intensive field investigations, it is important that immediate first aid be given to all severe cases. If breathing has stopped artificial respiration should be applied at once and continued until either the patient breathes normally or a physician arrives and gives other directions. The best treatment consists in the early administration of oxygen or oxygen plus 5 per cent carbon dioxide. This treatment should be continued at the place of the accident until carbon monoxide is completely eliminated from the blood or until such a low percentage of blood saturation has been obtained as to cause no further injury. Oxygen should be administered for at least thirty minutes and it may be advisable in severe cases to give oxygen for a longer time. If consciousness returns before the blood has reached this low limit of saturation, it is a good indication that there is no definite brain injury. Should consciousness, however, not return at this stage in the treatment it is probable that there is

1. U. S. Public Health Reports, Oct. 6, 1922.

definite brain injury which may or may not be serious. The patient should be removed to a hospital for further treatment which will necessarily be somewhat symptomatic. It should consist in absolute rest, fresh air, supply of fluids by rectum (Murphy-drip) and such other means of building up resistance as are indicated. Strychnine, atropine, and digitalis preparations should be used with great caution inasmuch as the heart has undergone considerable strain and any additional stimulating agent may overstimulate or over-activate the heart and thereby cause death. Should symptoms of pneumonia develop, the usual appropriate measures should be adopted. Care should be given to the secretion of urine as nephritis is a common sequela.

During the treatment of these cases frequent examinations of the blood were made for the amount of CO present. The rate of CO elimination was then determined. The data obtained indicated that in the severe cases the elimination of CO was not as rapid as had been anticipated and that it apparently depended upon the duration of the exposure to the gas and the degree of poisoning. Small amounts of CO may also exist in the blood for a long period, having been detected two days after oxygen treatment. Its existence in the blood probably may be recognized at even later periods by more sensitive methods of recognition.

In the less severe cases no permanent injury was found to exist. After treatment with oxygen, the headache was either relieved or less severe and after a few hours the patients reported themselves feeling perfectly well. Considerable evidence is at hand which points to the rather wide distribution throughout the city of cases of slight CO poisoning. These exist both in large industries using gas and in homes. The possibility of an accumulative effect of continued exposures to small amounts of CO must be further considered. It has been pointed out that many of the slight indispositions and so-called "colds" may in reality be cases of CO poisoning. Whether such exposures may result in pathological changes calls for further and careful medical investigation. No evidence was found that the toxicity of the unburned Baltimore gas was appreciably greater than its equivalent in pure CO.

SUMMARY

In the course of the investigation, detailed studies were made of the conditions existing on the premises where accidents occurred from manufactured gas, together with a careful study of the treatment given patients in each case. A number of accidents were due to raw gas escaping through leaks, poor adjustments, old or inadequate appliances or connections, and careless adjustments. In the majority of instances, the poisoning was due to carbon-monoxide which formed in improperly designed equipment or equipment which had become old, was out of adjustment or in some way had been altered. The degrees of poisoning ranged from mild to severe and the poisoning was quite general throughout the entire city. A large number of accidents might easily have been avoided. Concerning the chemical composition of the gas, its physical characteristics and the conditions under which it is supplied to the consumers, there was no evidence of a hazard peculiar to Baltimore.

The investigation emphasized the need of immediate treatment of cases of severe poisoning. Many lives are saved by the early application of artificial respiration. Oxygen should be given as soon as possible.

Further study should be made of the rapidity of carbon-monoxide elimination. The use of 5 per cent carbon dioxide in oxygen causes a stimulation to the respiratory center and may cause a more rapid elimination of the toxic substance. Additional investigation may warrant its use in cases of carbon-monoxide poisoning.

THE VALUE OF THE PRECIPITATION TEST (KAHN) FOR SYPHILIS AS A PUBLIC HEALTH LABORATORY PROCEDURE*

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AND
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OF THE various precipitation tests recently proposed for the diagnosis of syphilis, that described by Kahn[1] has probably attracted the most attention. This is doubtless due to its simplicity, together with its apparent high degree of accuracy. The many workers who have reported upon this test agree that it constitutes a valuable check upon the complement fixation reaction and that its simplicity enlarges the field of its usefulness. Kahn advocates its use in conjunction with the complement fixation test rather than to replace the latter.

The chief desideratum of a public health laboratory is the use of tests of thoroughly proven value. New procedures and methods should always be welcomed and given a thorough trial, but in view of the fact that clinical data are limited, together with the financial handicaps under which most such laboratories work, it is felt that only such tests and examinations as give reliable information to the physicians should be included as routine procedures.

The purpose of this paper is to report a series of 1,395 precipitation tests by the Kahn method, and to evaluate its usefulness as a public health laboratory procedure.

TECHNIC

The tests were compared in every instance by dividing each serum into two parts, one part being used for the Wassermann test and the other for the precipitation test. All tests were read independently of each other so that the result obtained by one method could not influence the reading of the result of the other. Craig and Williams[2] consider independent reading highly important and maintain that knowledge of the result of the Wassermann test will unconsciously influence the interpretation of the result of the precipitation test.

Preparation of the Antigen.—Detailed directions for the preparation of the antigen are given in Kahn's original communications.[1] He has found[3] that a satisfactory antigen should contain sufficient lipoids to hold the cholesterin in solution, but that an excess of lipoids interferes with the sensitiveness of the antigen. He has attempted to obviate this difficulty and to determine when the proper amount of extraction has taken place by observing the color of the alcoholic extract or by comparison with a color standard. It seems best to remove the alcohol as soon as a slight yellow color appears. Six or seven days in the ice box followed, if necessary, by two or three days at room temperature usually is sufficient to obtain proper extraction. Antigen prepared in this laboratory has been compared with one kindly given us by Kahn, in 245 tests, with less than 0.8 per cent disagreement between the two. On the other hand, precipitation tests using an antigen prepared without particular regard to the points mentioned showed marked discrepancies. The preparation of the antigen, then, seems

* From the Laboratories of the Alabama State Board of Health.

1. Kahn, R. L. Arch. Derm. and Syph. 1922, 5, 570; 5, 734; 6, 332.
2. Jour. A. M. A. 1922, 79, 1597.
3. Personal communication.

to be a fundamental factor governing the success or failure of the test.

Wassermann Technic.—The method used for the Wassermann test was that described by Kolmer.[4]

Inactivation.—The inactivation of the serum recommended by Kahn is for 30 minutes at 56° C. The inactivation of the serum in Kolmer's technic is for 15 minutes at 55° C. If these two different time intervals are adhered to, it naturally means two sets of inactivations when Kolmer's Wassermann technic is used. Consequently precipitation tests with 161 sera, inactivated by both the above methods, were compared, with only five disagreements, three in favor of the 15 minute inactivation and two in favor of the 30 minute period, as evidenced by the results of the Wassermann tests on these sera. However, in the comparative series of tests, the results of which are described below, the inactivation recommended by Kahn has been adhered to.

Performance of the Test.—The tests were set up by mixing the antigen and serum in the amounts and in the manner recommended. They were then incubated at 37°C. for 15 to 18 hours (overnight) and then read, as stated above, independently of the result of the complement fixation test. We have been unable to obtain any results of value with shorter incubation periods.

Kahn recommends vigorous shaking of the antigen and serum mixture for three minutes. This does not seem to be necessary. In 252 tests set up in duplicate, one set being shaken vigorously for the three minute period and the other set being merely shaken to insure mingling of the various ingredients as in the Wassermann test, there was complete agreement. The ring test described by Herrold[5] is also apparent evidence that thorough shaking is not essential to the success of the test.

4. Kolmer, J. A. Amer. Journ. Syph. 1922, 6, 2.
5. Herrold, R. D. Jour. A. M. A. 1922, 79, 957.

RESULTS

Table I shows the results of the tests. It is seen that there was complete agreement in 1,260 or 90.3 per cent. Of these 304 were 4+, 6 were 3+, and 11, 2+; 20 doubtful or 1+, and 919 were negative. In addition there was close agreement in 33, the difference being in degree only; this makes a total agreement of 927 per cent. There were 102 tests which showed complete disagreement. Fifty-five Wassermann tests which were positive in varying degrees gave negative precipitation tests and 40 positive precipitation tests gave a negative Wassermann. Two tests which gave 4+ Wassermann reaction showed only a very doubtful precipitation and 5 strongly positive precipitation tests were doubtful (1+) by the Wassermann reaction.

Twelve sera which showed no complement fixation caused a slight precipitate in the Kahn test, sufficient to be recorded as 1+, whereas only 3 negative precipitation tests gave a doubtful Wassermann. Since no significance can be attached to a doubtful Wassermann reaction in the absence of clinical evidence, these 15 tests have been classed as differences in degree only and are included with the 33 which gave relative agreement.

Of the total number of tests there were 69 in which it was stated that treatment had been given. It was in these tests that the greatest discrepancy occurred, there being agreement in only 54 (78.3 per cent), and complete disagreement in 15, or 21 per cent. Of these 15 serums only two gave a negative Wassermann and a positive precipitation test, while thirteen were positive by the Wassermann test and negative by the precipitation test.

DISCUSSION

No classification of the cases constituting this series can be attempted, since the only data available are the clinical remarks on the request slips accompanying the specimens. They constitute, however,

a representative cross section of public health laboratory tests.

The lack of agreement in the series of treatment cases may be a significant observation. While this number of tests is too small to warrant a definite conclusion, it suggests that treatment interferes with the precipitation reaction sooner and to a greater extent than with the complement fixing properties of the serum. If this proves to be the case it will, of course, make the precipitation test less valuable in treatment control than in diagnosis.

In this connection arises the importance of the particular Wassermann technic used for paralleling the precipitation test. Keim and Wile [6] report favorably on the sensitiveness of the precipitation test as compared with the Wassermann test, using a cholesterinized antigen and icebox fixation. In our series the Wassermann technic used was that described by Kolmer [4] which also calls for fixation at ice box temperature and the use of a highly sensitive antigen. By this method, sera from treated cases usually give positive complement fixation longer than by most other methods. This offers a possible explanation of the relative lack of agreement between the two tests in the treated cases of our series.

When a properly prepared and sufficiently sensitive antigen is used, the precipitation test for the diagnosis of syphilis seems to have a certain definite value. A satisfactory antigen, however, is, apparently, no less important in this test than in the complement fixation test. When the antigen meets the requirements which have been described, close agreement between the two tests can be expected, but the reliability of the antigen must be assured by preliminary comparisons before confidence can be placed in the results of the reaction.

Whether a test of this nature will find a place among routine public health laboratory procedures remains for the future to decide. In its present status, when differences occur between the results of the precipitation and complement fixation tests, dependence must be placed upon the latter. Where routine tests are constantly made with little or no information regarding the clinical history the preferred test must always be the one which possesses the greatest reliability and accuracy and which has survived after long experience. In the serum diagnosis of syphilis this is, of course, some dependable modification of the Wassermann reaction. The inclusion of an additional procedure for the same purpose means an additional strain on time, material and personnel which are usually already limited.

Unless information of a trustworthy and helpful nature is gained from additional corroborative tests they are best

6. Keim, H. L. and Wile, U. J Jour. A. M. A. 1922, 79, 870.

TABLE I

RESULTS OF 1395 TEST SERUMS

PRECIPITATION REACTION	WASSERMANN REACTION					
	4+	3+	2+	1+	Neg.	Total
4+	304	4	3	4	36	351
3+	4	6	2	1	2	15
2+	5	0	11	0	2	18
1+	2	0	0	20	12	34
Neg.	49	2	4	3	919	977
Total	364	12	20	28	971	1395

TABLE II

TREATED CASES

PRECIPITATION TESTS	WASSERMANN REACTION					
	4+	3+	2+	1+	Neg.	Total
4+	17	0	0	0	1	18
3+	0	2	0	0	0	2
2+	0	0	0	0	1	1
1+	0	0	0	0	0	0
Neg.	8	1	1	3	35	48
Total	25	3	1	3	37	69

excluded from the routine technique and it is felt that the precipitation test, at the present time, adds little to the value of the laboratory diagnosis of syphilis. When the results of the two tests agree it does not strengthen the value of the Wassermann reaction, and when they differ, the result of the precipitation test is disregarded, and must be disregarded, until careful clinical and pathological studies establish its undoubted specificity. Consequently in the present stage of its development, the precipitation test seems to have a larger field of usefulness in hospitals and similar institutions, where the clinical evidence can be studied, than in public health laboratories.

There have been many attempted surveys to determine the prevalence of syphilis in the general population and more surmises of its prevalence. The data obtained in the past have not been entirely satisfactory. The impracticability of obtaining Wassermann tests on a large representative population is obvious. It seems probable that a simple precipitation test, obviating the time consuming element of the Wassermann test and utilizing a small amount of serum, as advocated by Kahn,[1] thus permitting the procuring of the test serum without the necessity of venipuncture, will make possible the accumulation of accurate statistics regarding the prevalence of this most important communicable disease. It seems to us that in this field lies, at present, the greatest value of the Kahn precipitation test.

SUMMARY

The Wassermann reaction and the precipitation test, using the method proposed by Kahn, have been compared in 1,395 sera submitted to a public health laboratory. There was complete agreement in 1,260 or 90.3 per cent and relative agreement in 33 more, making a total agreement of 92.7 per cent.

The widest disagreement occurred in a relatively small number (69) of treated cases, which gave a total disagreement of 21.7 per cent.

The present value of this test as a routine public health laboratory procedure is questionable.

VALUE OF MULTIPLE CULTURES IN THE DIAGNOSIS OF DIPHTHERIA

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FOR some years the mailing case outfit for diphtheria cultures which is furnished to physicians by this laboratory has included two vials of Löffler's serum and two sterile swabs, each in a separate envelope. The vials have screw caps and the tops are paraffined on the outside, to prevent the serum from drying. One of the envelopes and one of the vials are labelled "throat" and the other envelope and vial are labelled "nose." The physician is requested to take a culture both from the throat and from the nose, to immediately make a plant from each in the appropriate vial of serum and to replace each swab in its envelope and to send these, together with the vials, to the laboratory. After the outfit is received at the laboratory another culture on Löffler's serum is planted from each one of the swabs. In this way four cultures are made from the swabs taken at the same time from each case, two cultures from the throat and two from the nose.

Previous to adopting this method of making four cultures from each case, this laboratory, in common with some others, had passed through a transition stage regarding the type of diphtheria outfits to be used. At first only one swab for taking a culture from the throat was sent out and after it was returned to the laboratory the plant was made. Later a vial of serum was added to the outfit and a culture from the throat was at once made by the physician, no culture being made at the laboratory. Later a second vial and a second swab were enclosed and two plants, one from the nose and one from the throat, were made by the physician. Following this the outfit and technique as described above were adopted. After being received at the laboratory cultures are incubated over night before the examination is made for the presence of the diphtheria bacillus.

From a questionnaire sent to the various state laboratories it is evident that most of them still use diphtheria outfits in which only swabs and no serum is contained. The cultures are planted after the swabs are received at the laboratory. It may be of interest to other workers to know the results obtained in this laboratory by the examination of four cultures from each case as compared with the results which would have been obtained if only a single culture or one culture from the nose and one from the throat had been examined. Our results for a two-year period have been studied primarily to determine whether enough additional positive diphtheria cultures are found in this way over what would have been detected if a single culture had been made from the throat, or one each from nose and throat, to justify the additional amount of time and expense this involves.

Not infrequently the physician fails to return the swabs as requested or occasionally the serum in the vials has become dried or mouldy or, for some other reason, the case cannot be included in this study. However, in the two-year period, the results of which were compiled, there were 9,237 sets of cultures made as above described which could be used for this study. A few of these showed no growth but it was thought proper to include these. Of this total number, 9,237, there were 51 which showed no growth on any of the tubes and in 5,790 others the cultures were all negative for the diphtheria

bacillus. In 709 others some of the tubes were negative and others showed no growth. This gives 6,550 sets of cultures which were negative or had no growth. Deducting these from the total, this leaves 2,687 which gave positive results in one or more cultures. It is the study of these 2,687 sets of cultures in which diphtheria bacilli were found in at least one of the tubes which is of interest. These do not represent the number of patients, as in some cases several cultures came from the same case. In 117 of this total number, 2,687, all of the cultures, both from the nose and throat, were positive. In 433 others both throat cultures, that planted by the physician and that planted at the laboratory, were positive, the nose cultures being negative and in 278 others both nose cultures were positive, while the throat cultures were negative. Thus, identical results in the cultures made by the physician and in those planted at the laboratory were obtained in 828 of the 2,687 sets of cultures: that is, there was an agreement in 30.8 per cent of all the positive cultures. If the negative cultures and those showing no growth in which there was an agreement in all four cultures were added to this it would show a total agreement in 6,669 of the 9,237 cases, or 72.2 per cent.

From the above it is evident that in nearly 70 per cent of the positive cases there was a discrepancy between the cultures planted by the physician and those planted at the laboratory from the same swabs. In 452 sets of cultures the throat culture planted by the physician was positive and all the rest negative, while the culture from the throat planted at the laboratory was the only one giving positive results 328 times. Cultures from the nose planted by the physician gave positive results 308 times when the others were all negative, while nose cultures planted at the laboratory gave 295 positive results, the other three in each case being negative. Ninety-eight times both the throat and the nose cultures made by the physician were positive, while the corresponding cultures planted in the laboratory were either negative or had no growth and fifty-three times the reverse was the case, both laboratory cultures being positive, while the cultures made by the physician were negative or showed no growth. In the remaining 325 of the 2,687 total positive sets of cultures a variety of different results was obtained, in all of which at least one positive culture from both nose and throat was obtained. These results are shown in the accompanying table.

REPORTED POSITIVE IN BOTH NOSE AND THROAT, 325

	P.	L.	P.	L.	P.	L.	P.	L.	P.	L.	P.	L.	P.	L.
Throat	+	—	+	ng	+	ng	ng	+	—	+	+	+	+	+
Nose	ng	+	+	+	—	+	+	+	+	ng	ng	+	+	ng
Number	1		2		2		4		3		3		1	

	P.	L.	P.	L.	P.	L.	P.	L.	P.	L.	P.	L.	P.	L.
Throat	+	+	+	+	+	—	+	—	—	+	—	+		
Nose	+	—	—	+	+	+	—	+	+	+	+	—		
Number	62		43		61		51		55		37			

P. = Cultures planted by physician.
L. = Cultures planted at laboratory.
ng = no growth.

Compiling the results given above, including those in the table, we obtain the following:

1. Positive results from throat cultures planted by physician:

All cultures positive	117
Both throat cultures positive	433
Physician's throat culture positive, others negative or no growth	452
Physician's throat and nose cultures positive, others negative or no growth	98
Physician's throat culture positive as shown in table	226
Total	1,326

Thus of the total of 2,687 positive cultures there were 1,326 of these found positive in the throat culture planted by the physician, or 49.3 per cent; that is, a little over 50 per cent of the positive cultures would have been overlooked if this method alone, which was previously employed in this laboratory, had been relied upon.

2. Throat cultures planted in the laboratory:

All cultures positive	117
Both throat cultures positive, others negative or no growth	433
Laboratory throat culture positive, others negative or no growth	328
Laboratory throat and nose cultures positive, others negative or no growth	53
Laboratory throat cultures positive as shown in above table	208
Total	1,139

That is, 42.4 per cent of the total number, 2,687. In others words, over 57 per cent would have been negative if this method alone, which at one time was employed and is still in use in many laboratories, had been relied upon in making the diagnoses.

3. Nose cultures planted by the physician:

Positive in all four cultures made	117
Both nose cultures positive, others negative or no growth	278
Physician's nose culture positive, others negative or no growth	308
Physician's nose and throat cultures positive, others negative or no growth	98
Physician's nose culture positive as shown in above table	225
Total	1,026

That is, 38.2 per cent of the total number of positive cases. Over 60 per cent would have been found negative if this method alone had been reported on for examination.

4. Nose cultures planted at the laboratory:

All four cultures positive	117
Both nose cultures positive, others negative or no growth	278
Laboratory nose cultures positive, others negative or no growth	295
Laboratory nose and throat cultures positive, others negative or no growth	53
Laboratory nose cultures positive as shown by the above table	223
Total	965

That is, 35.9 per cent of the total.

5. Physician's throat and nose cultures combined:

All four cultures positive	117
Both throat cultures positive, others negative or no growth	433
Both nose cultures positive, others negative or no growth	278
Physician's throat culture positive, others negative or no growth	452
Physician's nose culture positive, others negative or no growth	308
Physician's nose and throat cultures positive, others negative or no growth	98
Both cultures positive as shown in above table	325
Total	2,011

Thus 74.8 per cent of the total number, 2,687, proved positive upon examination of both the throat and nose cultures as planted by the physician. Or, in other words, 25 per cent of the cases would have been overlooked if no laboratory cultures had been made.

6. Laboratory throat and nose cultures combined:	
All four cultures positive	117
Both throat cultures positive, others negative or no growth	433
Both nose cultures positive, others negative or no growth	278
Laboratory throat culture positive, others negative or no growth	328
Laboratory nose culture positive, others negative or no growth	295
Laboratory nose and throat cultures positive, others negative or no growth	53
Both nose and throat cultures positive as shown in above table	325
Total	1,829

That is, 68.1 per cent of all positives would have been detected by this method. Nearly one-third of the positive cases would have been overlooked.

7. Throat cultures alone, one made by the physician and the other planted from the same swab at the laboratory:	
All four cultures positive	117
Both throat cultures positive, others negative or no growth	433
Physician's throat culture positive, others negative or no growth	452
Laboratory throat culture positive, others negative or no growth	328
Physician's throat and nose cultures positive, others negative or no growth	98
Laboratory throat and nose cultures positive, others negative or no growth	53
Throat and nose cultures positive as shown in the above table	325
Total	1,806

Or 67.2 per cent of the total number. Nearly one-third would have been missed if the two throat cultures alone had been relied upon.

8. Nose cultures alone, one made by the physician and the other planted from the same swab at the laboratory:	
All four cultures positive	117
Both nose cultures positive, others negative or no growth	278
Physician's nose culture positive, others negative or no growth	308
Laboratory nose cultures positive, others negative or no growth	295
Physician's throat and nose cultures positive, others negative or no growth	98
Laboratory throat and nose cultures positive, others negative or no growth	53
Nose cultures positive as shown in the above table	325
Total	1,474

Thus, 54.4 per cent were detected by this method.

In studying these figures attention may well be called first to the results obtained when the diphtheria outfit contains only a sterile swab which is returned to the laboratory and one culture is made from this at the laboratory. This appears to be the common practice in many state laboratories. In the above series there were obtained positive results in only 42.4 per cent of the total number of positive sets of cultures, 2,687, from these cultures planted in the laboratory from the swab from the throat. It was a surprise to find that so large a per cent would have been missed if no other cultures had been made.

Probably the next most common practice in state laboratories is to send out two swabs, one for the nose and one for the throat and have cultures made from each of these in the laboratory. In the above series this gave positive results in 68.1 per cent of the entire number of positive cases. It was again a surprise to find that nearly a third of the positive

cases would have been overlooked if this method had been employed alone.

It is unnecessary to call attention further to the results given above. A study of these indicates the advantages of multiple cultures being made from each case. From the statistical results as given above, we are fully convinced that the additional number of positive diphtheria cultures that was found by duplicating each of the cultures is well worth the extra time and material which it requires. The best substitute for this in our experience is the making of two cultures, one from the throat and one from the nose, by the physician at once after the swab is taken. The large per cent which would have been overlooked by having a single culture planted by the physician from the throat or a single culture from the throat planted in the laboratory is evident.

We appreciate that the larger number of positive cultures found by the technique followed in this laboratory is probably due chiefly to the examination of multiple cultures from each case, not to the fact that a part of these were made by the physician and a part in the laboratory. If the physician had made two cultures from the nose and two from the throat it is quite possible that a still larger number of positive results might have been obtained.

SUMMARY

The results of 9,327 sets of cultures for diphtheria are given, where in each case one culture from the nose and one from the throat were planted by the physician and duplicate cultures from the same swabs were planted in the laboratory. Of these, 2,687 were positive in some one or more of the four cultures. If a single culture had been planted in the laboratory from the swab from the throat only 42.4 per cent of these positive cases would have been detected. Next to the planting of the entire four cultures the best results were obtained when the physician made cultures from both nose and throat, by which means 78.4 per cent of the positive cases were found.

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REPORT OF COMMITTEE ON REFUSE COLLECTION AND DISPOSAL*

Read before the Sanitary Engineering Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 9, 1923.

AN informal report was submitted by M. N. Baker, Chairman of the Committee. First of all tribute was paid to the memory of the late Rudolph Hering, a member of the Committee who died during the year. Mr. Hering was the first and for many years the only American engineer to make careful studies of garbage and refuse disposal, especially with reference to European practice. He was for many years Chairman of the Garbage Disposal Committee of the American Public Health Association (antedating the formation of the Sanitary Section). He kept the Association and the engineering profession advised as to the development of British refuse disposal practice and from time to time reviewed the status of garbage and refuse collection and disposal in America. At the Philadelphia meeting of the American Public Health Association in 1897 Mr. Hering presented a report on current garbage disposal practice in the United States and in Europe. This report was based on material which he had collected and compiled at his own expense. As an illustration of the extent of the work involved it may be noted that

* This report was made orally and has since been reduced to writing for purposes of record and somewhat extended at certain points, especially as regards the five methods of disposal outlined in the report.

Mr. Hering sent inquiry blanks to 170 American cities. Many of the cities replied with detailed information. All these reports were once in my hands for inspection with a view to their publication but no way of getting them into print was found. Fortunately, toward the end of his long and useful career (in 1921) Mr. Hering, in conjunction with Samuel A. Greeley, a member of this Committee, published a monumental book entitled "Collection and Disposal of Municipal Refuse."

Dealing next with the present status of garbage disposal in the United States, Mr. Baker stated that any one of several methods of disposal which have been in use for a number of years past will give satisfaction if one of them is chosen and a plant designed and built to suit local conditions after competent engineering study and if when built the plant is operated under competent engineering direction. These systems include feeding the garbage to hogs; burial in shallow earth trenches; "sanitary fill," or dumping the garbage, sometimes to considerable depth, and keeping the top of the fill constantly covered with clean earth or clean ashes; incineration; and reduction.

Hog Feeding has been the method of garbage disposal practised by nearly all New England cities (Boston being the chief exception) for decades past. This method of disposal has also been widely used, particularly since America entered the war, in other parts of the country. With the same degree of operating intelligence as is required for incineration or reduction, there is no good reason why garbage disposal by feeding to hogs should not be entirely sanitary and otherwise satisfactory for many communities, even extending to those of large size.

Burial in Shallow Trenches is also an eminently satisfactory method of disposal but as a rule is suitable for only relatively small communities.

The Sanitary Fill method of disposal has given satisfactory service at Seattle, Wash., for a number of years past, having been substituted for disposal by incineration in three destructors of the British type. This experience at Seattle is significant in view of the fact that the population of the city in 1920 was 315,000. In Ottawa, Canada, incineration has also been given up and the sanitary fill used in its place. The same change has taken place elsewhere. Either this or a modified method has been in use in Savannah, Ga., for two or three years past, taking the place of incineration there also.

Incineration has been widely used in the United States and Canada, but a large percentage of the incinerators built have been given up within a few years after they were built and some have never even been put in operation. As noted later regarding this and other processes, the reason for abandonment has more generally been political rather than engineering in character, but it should be noted that comparatively few of the incinerators built in the United States have been designed by competent engineers and rarely have they been operated under any sort of engineering direction.

Reduction has been the method generally in vogue for disposing of the garbage of the larger cities of the country. Originally most of these plants were privately owned and operated, but within the last twenty years a number of important cities have taken over the privately owned plants or built reduction plants of their own, beginning with Cleveland, in 1905, and continuing with Columbus, Schenectady, New Bedford, Chicago, Rochester and Syracuse, Washington, D. C.; and Philadelphia, about in the order named. During and since the war high prices for labor, coal and solvents on the operating side and the heavy fall in the grease and fertilizer base resulting as a by-product of garbage reduction plants have tended to discourage the adoption of this method of disposal by other cities, but it is still practiced in municipally-owned plants in all of

the cities just mentioned. At Baltimore and some other cities privately-owned garbage reduction plants are still in use.

Although there has been a tendency to turn to incineration during the last two years or so, it may be stated broadly that throughout the country changes from any one of the methods mentioned to some other have been paralleled at the same time by changes elsewhere in the opposite direction. This is largely due, as already intimated, to the fact that garbage disposal is not yet recognized by municipal authorities as being as much an engineering matter as water supply, sewerage, bridge construction, etc. Many instances have occurred where a change from one method to another, or at least the abandonment of an old plant of some one of the types mentioned, has come about for no other reason than that there was a change in the political administration of the city after which the garbage works and other undertakings of the superseded administration were disparaged and even, as has happened to garbage works, been closed.

The garbage disposal problem of to-day, it may be said in conclusion, is more one of reform in municipal administration than of advance in engineering methods. There are, however, only a few engineers who have specialized in garbage disposal. Here lies a real danger because in a considerable percentage of the few cases where city officials recognize that garbage disposal is an engineering problem dependence is placed on some local engineer who has never given any attention to the subject. Too rarely do such men have the courage to confess the fact and ask that an engineer versed in garbage disposal be called in consultation. Here lies opportunity for the members of the Sanitary Engineering Section of the American Public Health Association. A few have realized this in some measure but more might emulate Rudolph Hering in his unselfish devotion to spreading the gospel of garbage sanitation and economics. He spent much time and money, first to inform himself thoroughly and then to inform engineers and other sanitarians and such of the public as desired information, concerning the best methods of garbage and refuse collection and disposal at home and abroad and, of vital import, of the necessity of choosing and applying that method of collection and disposal—for the two go together—best suited to local conditions.

M. N. BAKER, Chairman.

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LOUIS I. DUBLIN, PH.D. TALIAFERRO CLARK, M.D. EDNA L. FOLEY, R.N.
ABEL WOLMAN, C.E. N. C. DYSART, M.D.

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THE KOBER FOUNDATON

We take pleasure in calling attention to a notable foundation made by Dr. George M. Kober, who has for many years been an honored member of our Association. It will be noted that with one exception the prizes offered through this foundation are for advancement in matters concerning hygiene and public health.

Dr. Kober's intention can best be described by quoting from his letter to the President of Georgetown University:—"In commemoration of the fiftieth anniversary of my graduation in medicine, I have created an endowment fund of sixteen thousand dollars to be held in trust by my alma mater, the Georgetown University of Washington, D. C.

This fund is to be invested by said university, and the income therefrom to be used annually for the following purposes:

The income of four thousand dollars to be used for a scholarship in the medical school, preference in the award to be given to residents of the District of Columbia, and of Modoc County, California.

The income of one thousand dollars to be devoted to the endowment of a gold medal to the best student in hygiene, and who at the same time has a creditable record in his other studies.

The income of one thousand dollars to be devoted to the endowment of a gold medal to be awarded annually to a member of the Association of American Physicians who has contributed to the progress and achievement of the medical sciences or preventive medicine. This medal is to be awarded by the Association of American Physicians upon the recommendation of its council.

The income of ten thousand dollars is to be used annually in awards for lectures by men who have contributed to the progress and achievement of the medical sciences or preventive medicine. The lectures to be delivered under the auspices of

Georgetown University in Washington, D. C., and to be published as a continuation of a series of lectures inaugurated March 28, 1920, as a vindication of animal experimentation.

The lectures and awards to begin in 1925, and the lecturer to be chosen in the following rotation and manner:

First year: From members of The Association of American Physicians designated by the council of said association.

Second year: From the members of the Washington Academy of Sciences, National Tuberculosis Association, the Medical Society of the District of Columbia, and the Washington Anthropological Society. The lecturer to be designated by the executive committee of the Medical Society of the District of Columbia.

Third year: From members of the Medical Corps of the Army, Navy, U. S. Public Health Service, and Members or Fellows of the American Public Health Association, the lecturer to be selected by the Executive Council of the Association of Military Surgeons.

The intent of the endowment fund for the lectures is to promote in a modest way research work among the members of the various associations with which I have been connected for many years.

The nomination of the lecturer to the President of Georgetown University by the respective agencies mentioned is conclusive.

If more than one lecturer is designated in any one year by the nominating bodies, the honorarium of $500 to to be divided evenly between the men, but not more than two men shall be chosen in any one year."

Dr. Kober is well known for his devotion to science and the advancement of medicine, especially that part of it which deals with prevention and public health. Along this line his attention has been directed to various matters. During recent years he has given much time to industrial hygiene and housing. We welcome this foundation and admire the spirit in which it has been given. To Dr. Kober himself we extend our thanks and congratulations with our best wishes that he may enjoy many years of happiness and usefulness.

DIABETES MELLITUS

Statistics for 1922, compiled by the Bureau of the Census, show a mortality rate from diabetes mellitus of 19.1 per 100,000 population in 30 states, against a rate of 17.1 for 1921 and a rate of 16.4 for 1920. Do these figures indicate an actual increase or only an apparent increase?

In 1914 to 1916 there was a marked increase in the mortality rates from diabetes and Dr. E. P. Joslin, a diabetes specialist, then said:

"This rapid rise in mortality in 1914, 1915, and 1916, I believe attributable to the increased attention devoted to this disease by the medical profession and the newspapers following the announcement of a new method of treatment."

May not the same be true to-day of the sudden rise in the mortality rate following the discovery of insulin? On the other hand, may not the unusual rise be, at least partially, due to the sudden increase in the consumption of sugar following the war-time scarcity? The per capita consumption of sugar in the United States in the fiscal year 1922 was 77 pounds, but 98 pounds in 1921, 91 pounds in 1920, 84 pounds in 1919, 78 pounds in 1918, and 83 pounds in 1917. Or may not the

unusual increase be simply another manifestation of prosperity, resulting in more overeating and in more automobile riding, but less exercise? No way presents itself to untangle satisfactorily the threads of such divergent possible explanations. Therefore, let us go back to earlier years before the days of insulin.

The following table from Mortality Rates, 1910–1920, shows increasing mortality rates from diabetes since 1900 and especially for the older age periods.

Age Period	Death Rate from Diabetes per 100,000 Population in the Registration States of 1900				
	1920	1910	1900	Annual average.	
				1911 to 1915	1901 to 1905
	Males				
All ages—					
Adjusted rate	15.9	15.0	10.8	15.7	11.8
Crude rate	17.3	15.8	11.3	16.8	12.3
Under 1 year	2.2	1.6	2.3	1.4	1.7
1 to 4 years	2.9	3.1	2.3	2.4	2.4
Under 5 years	2.8	2.8	2.3	2.2	2.2
5 to 9 years	3.6	3.3	2.2	3.0	2.8
10 to 14 years	4.2	4.2	4.1	4.2	4.7
15 to 19 years	5.8	4.9	5.6	5.1	4.8
20 to 24 years	5.7	4.8	3.8	5.6	3.5
25 to 34 years	5.9	5.8	5.3	6.1	5.7
35 to 44 years	9.2	9.2	7.8	9.2	8.1
45 to 54 years	23.8	25.5	15.5	25.4	19.0
55 to 64 years	63.1	63.9	37.6	67.2	44.1
65 to 74 years	111.0	103.2	71.1	107.6	76.8
75 years and over	149.2	103.4	88.3	123.4	84.8
	Females				
All ages—					
Adjusted rate	21.0	17.9	10.1	19.3	12.3
Crude rate	23.9	19.5	10.7	21.3	13.1
Under 1 year	1.5	1.2	2.3	1.1	2.2
1 to 4 years	2.4	2.2	1.7	2.1	1.9
Under 5 years	2.2	2.0	1.8	1.9	2.0
5 to 9 years	3.1	3.7	2.5	3.3	3.4
10 to 14 years	5.7	4.5	4.4	5.4	4.7
15 to 19 years	4.7	5.7	3.5	4.6	3.0
20 to 24 years	4.6	3.5	4.1	4.3	3.1
25 to 34 years	5.4	5.3	4.8	5.3	4.3
35 to 44 years	9.2	8.8	5.8	9.5	7.1
45 to 54 years	36.6	29.0	17.3	32.4	21.0
55 to 64 years	99.1	88.1	43.1	89.7	55.9
65 to 74 years	170.6	131.8	63.5	154.7	84.3
75 years and over	156.3	131.5	51.9	140.9	77.2

NOTE.—The populations are those enumerated at the Federal censuses of Jan. 1, 1920, Apr. 15, 1910 and June 1, 1900, and, for the annual averages, are estimated as of July 1, 1913 and 1903. Unknown ages are not distributed, except for adjusted rates.

If the increases are only apparent the greater increases in the older age periods are to be explained by the fact that at the older ages there are many more or less indefinite causes of death which may formerly have concealed many deaths, which under the present practice of more complete urinary examinations, would have been certified as diabetes. Such certified causes as old age, cerebral hemorrhage, and pneumonia may easily have concealed deaths from diabetes mellitus. However, it is hard to explain as only apparent differences, the adjusted rates of the various race stocks shown in the next table.

Area and Country of Birth of Mother.	Death Rate from Diabetes per 100,000 Enumerated Population	
	Adjusted Rate	Crude Rate
Chicago—		
Ireland	24.8	36.3
Germany (includes German Poland)	22.4	32.7
Denmark, Norway and Sweden	21.4	23.1
United States	19.4	13.0
New York:		
Germany (includes German Poland)	29.5	52.5
Ireland	23.8	39.2
Canada	21.4	26.0
England, Wales and Scotland	19.5	32.2
Italy	19.3	11.5
United States	15.7	16.0
New York, N. Y.—		
Germany (includes German Poland)	35.3	61.2
Ireland	26.0	36.4
England, Wales and Scotland	21.4	32.9
Italy	19.7	12.7
United States	17.1	12.1
Pennsylvania:		
Germany (includes German Poland)	21.3	36.3
England, Wales and Scotland	19.2	28.0
Ireland	17.4	29.9
United States	16.4	15.5
Italy	9.1	4.4
Philadelphia—		
Germany (includes German Poland)	20.9	38.1
Ireland	18.9	28.8
United States	16.2	13.9

NOTE.—The populations are those enumerated at the Federal census of Jan. 1, 1920

Furthermore, not only is it conceded by all that the Jews have high rates from this disease, but the very high rate of 38 per 100,000 has been found for the inhabitants of Malta and the very low rate of 3.1 for the Japanese in Japan.

Now, if we once admit that the differences in the mortality rates of the different race stocks are real, we are then confronted with the question whether environment may not share the responsibility with heredity. Then, as diet plays such an important rôle in the treatment of diabetes, it seems reasonable to believe that differences in diet may play some part in the differences in rates for the various race stocks. And if this is admitted we find ourselves forced to wonder if the increases in all these tables and also in the 1922 rates for the 30 states are not probably at least partially real.

Certainly the safe attitude for public health workers to take is that diabetes may be actually increasing and that whether increasing or not, the incidence of the disease can probably be lessened by careful attention to diet.

SURGEON GENERAL HUGH S. CUMMING

We take pleasure in calling attention to the action of President Coolidge in nominating Dr. Hugh S. Cumming for reappointment as Surgeon General of the United States Public Health Service.

We believe that this honor is justly due to him on account of the efficient service rendered during his first term. During the last few years the Public Health Service has had unusual and unexpected duties thrust upon it, combined with

inadequate appropriations and lack of time for preparation. It was forced into contact with the malodorous conduct of the Veterans' Bureau. It speaks much for the wisdom of its guiding officer that the Service has come through all of this with a minimum amount of criticism, and without the slightest suspicion of connection with the irregular transactions which recent investigations have brought to light. The Service has the respect and confidence of the entire country.

We congratulate General Cumming on this recognition of his excellent administration, and we congratulate the Service and the country on his retention as chief officer for another term.

DR. CHAPIN S FORTIETH ANNIVERSARY

On January 28, 1924, a dinner was given in honor of Dr. Charles V. Chapin by his friends and associates to commemorate his forty years as Superintendent of Health of the City of Providence. The dinner was largely local in character, but the significance of Dr. Chapin's forty years of service in Providence is far from local. It is an outstanding national event which calls for thoughtful consideration by all who are engaged in the field of public health.

As was eloquently stressed by every speaker, Dr. Chapin is the dean of America's health officers. Forty years of continuous official service in an American municipality is most exceptional. When this is coupled with extraordinary contributions to the science and the practice of municipal health administration, the occasion is even more unusual. No wonder that for years, the rank and file of public health workers have hoped at their annual meetings, as an expression of their high regard for Dr. Chapin, that he would consent to have them elect him their President. But, even if he has succeeded in escaping the responsibilities of office, he knows that he enjoys the respect and love of the entire profession of public health workers.

The underlying characteristic of Dr. Chapin's work is its scientific spirit. His service has never been marred with dogmatizing. He has always maintained an open mind. Providence under his direction has been the experimental laboratory of public health administration in the United States. Dr. Chapin was always in front of the procession trying out this, trying out that. It was through trial and record that he decided to discard terminal disinfection, and to minimize the value of such orthodox public health activities as nuisance and plumbing inspection. An experiment led to his discovery of the importance of the carrier in the control of infectious disease and the necessity for isolation of cases. No one knows how many other new leads he has followed; how many times his results have been negative or have failed to confirm his suspicions. But he has also succeeded, and it is because of his many outstanding successes that he has won for himself preeminence in the public health profession.

The great lesson of Dr. Chapin's life work is to maintain at all cost the scientific spirit in the administration of public health. If this succeeds, the achievements of the future will be great indeed. There can be no fear of stagnation when action is based on knowledge. For in the new public health will focus the discoveries of medicine, of sanitary engineering, and of public administration. As the years run on and the new public health has become available to the whole people with consequent additions of years of life and of happiness, the name of Chapin will be linked with this achievement as that of Pasteur is with the newer therapy for infectious disease.

ASSOCIATION NEWS

LIST OF MEMBERS

Proposed for election to the A. P. H. A. January 27 to February 29, inclusive.
Names of New Members are set in Light Face Type.
Names of Sponsors are set in **Bold Face Type.**

CALIFORNIA

Arthur S. Baker, M.D., Alhambra, Calif.
Adele R. Eiler, M.D., 330 N. Broadway, Los Angeles, Calif. Deputy County Health Officer.
Oscar O. Young, M.D., 117 S. Newlin Ave., Whittier, Calif. Deputy County Health Officer.

CANADA

J. W. S. McCullough, M.D., Toronto, Ontario
Chester P. Brown, M.A., M.B., D.P.H., William Head Quarantine Station, Victoria, B. C. Medical Superintendent.

J. T. Phair, M.B., D.P.H., Toronto, Ontario
Elizabeth Kiteley, M.B., Dept. of Education, Toronto, Ontario. School Medical Officer.

DISTRICT OF COLUMBIA

H. H. Moore, U. S. Public Health Service, Washington, D. C.
Selwyn D. Collins, A.B., A.M., Statistical Office, U. S. Public Health Service, Washington, D. C. Statistician.

GEORGIA

M. E. Winchester, M.D., Thomasville, Ga.
J. W. Payne, M.D., Americus, Ga. Commissioner of Health.

ILLINOIS

Helen W. O'Malley, R.N., Chicago, Ill.
Anna Hanrahan, R.N., 1750 Columbia Ave., Chicago, Ill. Head Nurse, Robey St. Municipal Tuberculosis Sanatorium.

KENTUCKY

George W. Duvall, M.D., Owensboro, Ky.
Lena Bennett, R.N., Daviess County Department of Health, Owensboro, Ky. Supervising Nurse.
Helen Dorothy Nusz, Daviess County Department of Health, Owensboro, Ky. Laboratory Technician.
Florence Puyear, R.N., Daviess County Department of Health, Owensboro, Ky. Public Health Nurse.

LOUISIANA

Homer N. Calver, New York, N. Y.
Edmund L. Leckert, M.D., City Board of Health, New Orleans, La. Supt. of Public Health.

MASSACHUSETTS

Lily O. Burbank, M.D., Boston, Mass.
May Bliss Dickinson, R.N., Trinity Court, Boston, Mass. Lecturer, Director of Mothercraft.

Homer N. Calver, New York, N. Y.
Walter Babcock Swift, A.B., O.B., S.B., M.D., B.L.I., 110 Bay State Road, Boston, Mass. Speech Correction in Public Schools.
Edward Godfrey Huber, A.B., M.D., First Corps Area Laboratory, Ft. Banks, Winthrop, Mass. Major Med. Corps, U. S. Army.

Francis X. Mahoney, M.D., Boston, Mass.
Edward A. Tracy, M.D., 536 Commonwealth Ave., Boston, Mass. School Physician.

MINNESOTA

Elizabeth A. Woodworth, M.D., Minneapolis, Minn.
Joab Palmer Foster, B.S., M.S., B.V.Sc., 4053 Bryant Ave., S., Minneapolis, Minn. Inspector, Div. of Public Health, Dept. of Public Welfare.

NEW YORK

Homer N. Calver, New York, N. Y.
Robert C. Wheeler, 36 State St., Albany, N. Y.
Meta Rutter Pennock Newman, A.B., 37 West 39th St., New York, N. Y. Managing Editor, The Trained Nurse and Hospital Review.

Huntington Williams, M.D., Dr.P.H., Albany, N. Y.
Sarah R. Addison, R.N., State Dept. of Health, Albany, N. Y. District Supervising Nurse, State Dept. of Health.

George W. Fuller, New York, N. Y.
Franklin Henshaw, Supt. Water Dept., Scarsdale, N. Y.

OHIO

C. A. Emerson, Jr., Philadelphia, Pa.
John K. Hoskins, B.S., C.E., E. Third and Kilgour Sts., Cincinnati, Ohio. Sanitary Engineer in U. S. Public Health Service.

WEST VIRGINIA

M. V. Ziegler, M.D., Charleston, W. Va.
Vinton A. Selby, M.D., Box 496, Clarksburg, W. Va. County Health Officer.

ASSOCIATE MEMBERS

LOUISIANA

Homer N. Calver, New York, N. Y.
Augustus W. Hayes, M.S., Ph.D., Dept. of Sociology, Tulane Univ., New Orleans, La. Sociological Teaching and Research.

MASSACHUSETTS

H. C. Woodfall, Atlanta, Ga.
J. Leslie Woodfall, B.S., 14 Beacon St., Boston, Mass. Consulting and Sanitary Engineer.

Florence L. Meredith, M.D., Northampton, Mass.
Elizabeth F. Genung, M.S., 2 West St., Northampton, Mass. Teaching Bacteriology, with Public Health emphasis, at Smith College.

NEW YORK

Charles A. Bentz, M.D., Buffalo, N. Y.
Ellen Lois Porter, B.S., 15 Day's Park, Buffalo, N. Y.

PLANS FOR THE DETROIT ANNUAL MEETING

"For to admire and for to see" is part of the object of every delegate in attending an annual meeting, particularly if the convention city is unfamiliar to the visitor. There will be much to admire and to see in Detroit, and, according to the plans of the Local Chairman, new and old visitors alike will be equally charmed and entertained. The extolling of the beauties and advantages of this city, however much the Association office may be moved in its zeal to undertake it, will be left in the capable hands of our enthusiastic resident members, who are already formulating unanswerable arguments as to why every member of the Association should attend the Fifty-third Annual Meeting in their city in October.

The Central Program Committee is in charge of the scientific sessions. It held its first meeting in New York on February 18 to discuss the general outline of the program and the general method of procedure. Every Section of the Association but one was represented, and Dr. Park conducted the meeting. Among the important actions of the Committee were the following:

The program regulations, as given in full below, were approved.

A recommendation was made to the Local Publicity Chairman to have abstracts of papers mimeographed for distribution to delegates at the meeting.

Joint meetings were approved between the Sanitary Engineering Section of the American Public Health Association and the American Society of Civil Engineers, which latter organization will meet in Detroit on Thursday, Friday and Saturday, October 23, 24 and 25.

Four General Sessions were tentatively decided on, one to consist of an Open Forum for the discussion of health officers' problems.

It was decided that, because of the necessities of printing, it would be impossible to accept papers for listing in the program unless their final titles are received in the Association office by August 1.

The next meeting of the Central Program Committee will be held in April.

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It is by no means too early to make your plans for the Annual Meeting. If you have in mind some interesting new material which you are intending to put in shape for a paper at the Annual Meeting, offer it to your Section Chairman immediately. He is already at work upon the program and delays at your end mean delays all along the line. If you are the chairman of a committee, and have a report to present, be sure that your Section Chairman knows that also. And, finally, if you have anything at all to do with the program get after it at once. Spring is not far away when thoughts of vacations and the old golf sticks intrude themselves upon one's more serious meditations. In the interest of everyone, see that everything about the program with which you have any connection is so arranged that you could dash off at a moment's notice to Honolulu and not leave the Central Program Committee tearing its hair because of your omissions.

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PROGRAM REGULATIONS

The following standards have been prepared after careful thought by the Central Committee on Program of the Association, and have been approved by the Executive Board. These standards represent an earnest endeavor to obtain for the annual meeting programs that will be of maximum usefulness and interest to members. Obviously, certain restrictions have been necessary and it is hoped that all speakers will loyally accept these for the good of the Association.

1. Preference should be given to papers that present new information or new viewpoints. Mere encyclopedic reviews of previous articles are to be avoided.

2. Abstracts (not exceeding two hundred words) of papers should be submitted to the Secretary of the Association and to the Secretary of the Section two months in advance of the meeting.

3. More than one paper per speaker at an Annual Meeting shall be authorized only by a formal vote of the Central Committee on Programs. Speakers are expected to notify all program officers involved where more than one paper has been offered or invited.

4. Presentations of papers shall be limited to fifteen minutes each. Discussions shall be limited to five minutes per individual.

5. Papers shall not be listed for reading in the absence of the author.

6. For most programs of a general nature, the maximum number of papers should be three per session. Rarely should the number equal five papers. In the case of highly tech-

nical sessions, such as Laboratory, where papers are shorter and discussion limited, exceptions may be necessary.

The purpose of this ruling is to ensure at least 30 to 50 per cent of the time for discussion, which is conceded frequently to be the most valuable part of a meeting.

Obviously all rules such as these are subject to reasonable interpretation, but exceptions to the foregoing shall be authorized only by a formal vote of the Central Committee on Program.

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SANITARY ENGINEERING DEFINITIONS

The Committee on Sewerage and Sewage Disposal of the Sanitary Engineering Section has been given the task of rewriting the "Definitions" used in connection with Sewerage and Sewage Disposal. Such definitions appeared in the Report of a Similar Committee and were published in the Journal's issue of October, 1917.

If Fellows and members of the Section will refer to this previous report and send in their criticisms or amendments at the earliest possible moment, they will be considered and be deemed an important aid to the Committee in its work. Particular attention is directed to certain sectional uses of terms in various parts of the country and it is the desire of the Committee to mention such usages.

All such information should be sent to John F. Skinner, Deputy City Engineer, Chairman of Committee on Sewerage and Sewage Disposal, Sanitary Engineering Section, A. P. H. A., Rochester, N. Y.

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COMMITTEE TO CO-OPERATE WITH THE AMERICAN HOSPITAL ASSOCIATION

At the Boston Annual Meeting, in October, a paper was read in the Public Health Administration Section by Dr. Alec Thomson on "The Relation of the Hospital and Dispensary to the Public Health Movement." This paper elicited much favorable discussion. Dr. E. R. Kelley, Dr. W. S. Rankin, and others as important in the field, expressed their hearty agreement with the author that a more co-operative relationship than at present exists should be effected between the public health administrator and the hospital and dispensary. As a result of this discussion, the Public Health Administration Section placed itself on record to favor any movement calculated to bring about the closest possible relationship between hospitals and dispensaries and the local departments of health.

This question seemed to have such general approval and to be of such importance that the Executive Board, at its meeting in December, voted that a Committee of the Association be created to act with a similar committee from the American Hospital Association to secure such coöperation. The Committee as appointed by Dr. Park is as follows:

George C. Ruhland, M.D., *Chairman*
Alec Thomson, M.D., Secretary
John J. Heagerty, M.D.
C. C. Slemons, M.D.
H. L. Rockwell, M.D.
A. J. Chesley, M.D.

✤

A CAMPAIGN FOR MEMBERS AMONG HEALTH OFFICERS

The March number of the JOURNAL was a specially prepared Health Officers' Number, designed to be useful and interesting to every type of public health administrator, from the newly-appointed health officer of a rural district where health work is entirely unorganized, to the executive of a highly complex public health system in one of our larger cities. Every full-time health officer in the United States—city, county and state—who is not a member of the Association, was presented with a complimentary copy. An attempt was made to reach every full-time medical director in Canada as well. Many part-time health officers were also included in our list of twelve hundred names.

A letter of invitation to join the technical society of the public health profession, the American Public Health Association, followed the March JOURNAL. It is too early to anticipate the response to our invitation. It is hoped, however, that many of these public health administrators will conclude that the JOURNAL and the Association will be of invaluable service to them in their work. The Association, likewise, may expect new life and enthusiasm from the participation of these new members in its affairs.

If you will send us the name of any health officer who did not receive the March JOURNAL, and who would be interested in seeing it, we will be happy to forward a copy to him.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to business office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: By City Health Department, a woman bacteriologist who can make milk tests, cultures, smears, and all microscopical examinations save Wassermann tests. Must be competent and experienced. References required. Write to M. B. Harutun, M.D., Commissioner of Health and Sanitation, Joplin, Missouri.

Wanted: Physician for school medical inspection work and to attend indigent sick of the city. Work is well organized and is entirely under direction of Department of Health. Salary to begin $2,500.00 per year. Apply with complete information regarding qualifications, age, experience, education and references to Dr. R. L. Carlton, City Health Officer, Winston-Salem, N. C.

Wanted: Engineer experienced in the purification of industrial wastes, such as dyes, etc. Location, New York. Address 553 B. W., care of this JOURNAL, New York address.

Wanted: Health officer for a city of 60,000 population where all modern lines of public health work are conducted. Applicants must have completed a course in public health at a recognized school and have practical experience. Position is under Civil Service. The salary is to be adjusted, depending upon qualifications. Address, Health Department, 441 Main Street, East Orange, N. J.

UNITED STATES CIVIL SERVICE EXAMINATIONS

Applications will be Rated as Received Until June 30, 1924

Medical Interne (Psychiatric): The examination is to fill vacancies in Saint Elizabeths Hospital, Washington, D. C., at an entrance salary of $1,200 a year and maintenance. Appointees may also be allowed the increase of $20 a month granted by Congress.

Public Health Service (*Medical Officer, Grades A and B*): The entrance salary for assistant medical officer, Public Health Service, is $2,400 to $3,000 a year, and for associate medical officer is $3,000 to $3,600. Any person appointed who is not over 30 years of age may subsequently take the examination prescribed by law for the Regular Corps before he reaches his thirty-second year. Persons between 32 and 40 years of age may take the examination for the Regular Corps after they have performed five years of creditable service under their appointment as assistant medical officer or associate medical officer, as the case may be. Applicants should at once apply for Forms 2415 and 2398.

POSITION WANTED

Positions wanted announcements will be carried in this column. The charge is $2 per insertion. Copy should be received at New York office by the 8th of the month.

Wanted: Positions for laboratory technicians completing an eight months course in the School of Public Health of the University of Louisville and the State Board of Health. Can accept positions June 1. Address School of Public Health, 532 West Main Street, Louisville, Kentucky.

Wanted: An executive position in public health by physician with Army and public health experience. Present position department director. Desire change. Minimum salary $4,800. Address 287, care of this JOURNAL, New York address.

Wanted: Greater opportunities by a health officer of a New England city. Present position four years. Formerly engaged in sanitary work in the United States Army. Practiced medicine before the war. Thirty-six years of age, married. Present position satisfactory but feel capable of handling a larger position. Address 284 C. A., care of this JOURNAL, New York address.

Wanted: Position as sanitary inspector by Englishman. Holds Bennetts College of Sheffield, Yorkshire diploma of proficiency for sanitation science. Desirous of locating in city or state department in the United States or Canada. References furnished. Address 286, S. W., care of this JOURNAL, New York address.

Wanted: Position as whole-time city health officer, or school inspector. Graduate in medicine and public health. Employed at present as whole-time county health officer. Unimpeachable references can be given. Address 285, R. S., care of this JOURNAL, New York address.

BOOKS AND REPORTS REVIEWED

The Evolution and **Significance of the Modern Public Health Campaign.** *C.-E. A. Winslow, Dr.P.H., Professor of Public Health, Yale School of Medicine. New Haven: Yale University Press,* 1923. Cloth. Price, $1.50.

This essay of sixty-five pages is an address given under the auspices of the Gamma Alpha Fraternity of Yale University. Divided into five chapters, beginning with the "Dark Ages of Public Health," it takes us through the awakening, due so largely to a few people in England, on to the time of Pasteur, who first gave us a scientific basis for modern preventive medicine. Chapter 4, which is called "The Golden Age of Bacteriology," is of particular interest, but is deficient as history because it deals almost entirely with advances made in the United States, and due credit is not given to the work done in Europe during this time. Grassi and Bignami are credited with being the discoverers of the parasite of human malaria in the stomach of the Anopheles mosquito, which we believe to be erroneous, the credit being due to Ronald Ross.

The essay is written in a flowing style which holds the attention of the reader, and we wish for it a wide circulation, especially among the laity, which unfortunately does not keep in touch with advances being made in medical science and preventive medicine.

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Geriatrics. **A Treatise on the Prevention and Treatment of Diseases of Old Age and the Care of the Aged.** *Malford W. Thewlis, M.D. Editor, Medical Review of Reviews; Associate Editor, the Therapeutic and Dietetic Age. Second Edition Revised and Enlarged. St. Louis: C. V. Mosby Company,* 1924. Cloth. Price, $4.50.

There are few things in life more sad than to see the mental and physical powers failing. As the powers fail with advancing age we say a person becomes childish, and we speak of second childhood, but there is none of the hope for the future that exists in childhood. The book before us sustains the proposition that the care of the aged should be a specialty just as is the care of childhood. Both old age and infancy are physiological events. In childhood every effort is made for the future. In old age too often the feeling is that nothing can be done, except to give as much comfort as possible and to keep the senile person from giving worry. There is no future to be considered. This pessimistic view is combatted throughout this work in a rational and convincing manner.

Perhaps the most heartening chapter in the book is that entitled: "The Value of Old Age," in which a long list of great men are given who accomplish much of their best work after reaching what is often considered useless old age. This includes men in every walk of life,—science, art, literature, statesmanship, and medicine. Among them may be mentioned Herbert Spencer, Darwin, Carlyle, Longfellow, Washington Irving, Titian, Bryant, Jacobi, Weir Mitchell, Keen, Edison and many others. This chapter does much to combat the pessimism engendered by the unfortunate statement attributed to the late Sir William Osler, that men over forty should be chloroformed.

We have been told many times that the extension of life expectation has been due to the saving of babies, and nothing has been done to improve the situation as regards the latter part of life. We have evidence that the older person of to-day does not stand as good a chance of living to great old age as the ancient Romano-Egyptian. If such studies as are presented in this volume can be popularized, doubtless something will be done to save the aged, and in this we wish the author and his friends Godspeed.

There is not a great deal in this book to criticize. It is written in an interesting style, with enthusiasm, and in accord with scientific knowledge. We believe that an undue faith is shown in certain remedial agents, especially electricity and the extracts of organs, and it appears that due consideration has been given to the mental effect on the patients in the evaluation of these remedies. However, if one who has little to look forward to in the future, as far as this world is concerned, can be made comfortable and even temporarily more efficient, this criticism may be forgotten.

Altogether the work is a heartening one and can be recommended with confidence.

Walter Reed and Yellow Fever. *Howard A. Kelly, M.D. Third Edition, Revised. Baltimore: The Norman, Remington Company.* Cloth. Price, $2.50. Pp. 352.

We welcome the third edition of this book, the popularity of which was proved by the necessity of a second edition within six months of the issue of the first. For several years it has been out of print, and efforts to obtain even a second hand copy met with failure. The Surgeon General's library in Washington had some eight copies, of which seven were borrowed and not returned, and the only salvation of the last one was in keeping it under lock and key.

It records the life and work of an American physician of whom we have great reason to be proud, and who through his personal characteristics endeared himself to an unusually large circle of friends. His life work was the demonstration of the agency of the mosquito in the transmission of yellow fever. The story has been told many times, but cannot be too often repeated. It records the history of indomitable perseverance, scientific enthusiasm, foresight, forgetfulness of danger and self-sacrifice.

Yellow fever has been the scourge of the American continent for several centuries, and in the United States has taken its toll from our seaports and river cities, from Boston on the north to Galveston on the south, and up the Mississippi Valley to Cairo, Illinois. To the south it has been particularly severe in the tropics, but has scourged temperate South America also. It has wiped out families and disrupted commerce, and its conquest is one of the greatest triumphs of preventive medicine recorded in history.

One of the most beautiful things in the character of Reed was the generous way in which he gave credit to every one who was associated with him in his investigation. All of them faced the risk of death from an enemy against which no protection was known, and all of them voluntarily submitted to the bite of infected mosquitos after this method of transmission was more than merely suspected. One of the Commission, Dr. Lazear, died in Cuba nine days after the bite of the insect. A second one, Dr. Carroll, was desperately ill, but recovered, though with a heart lesion which ultimately had much to do with shortening his life. Dr. Agramonte was immune, and Dr. Reed did not contract the disease, but this fact does not detract in any way from the high minded courage which they showed.

The book records also the devotion of one young physician, Dr. Cooke, and a number of privates, among whom Kissinger and Moran deserve especial mention, who voluntarily submitted to experimental infection. A deed which required even more courage was the service rendered by several men who volunteered to sleep in a building in which there were placed three large boxes filled with sheets, pillow slips, and blankets contaminated by contact with yellow fever patients and their discharges, taken from the beds of the sick in Havana and at Columbia Barracks. Many of these articles had been purposely soiled with black vomit, urine and fecal matter, materials which for many years had been believed to be carriers of the infection. The material was unpacked by Dr. Cooke and two privates of the hospital corps, Folk and Jernigan, all of them non-immune. They slept in this room each night from November 30th, until December 19th, packing the material in boxes in the morning and unpacking it again at night. This required courage far exceeding that of the soldier who goes into No Man's Land, and the names of these men should be equally immortal with those of the medical officers who directed the work.

Though extra pay was offered to the volunteers it was declined, and Reed with his characteristic appreciation and courtesy touched his cap and said, "Gentlemen, I salute you." In writing of it he said, "In my opinion this exhibition of moral courage has never been surpassed in the annals of the Army of the United States." It is further recorded there was always an excess of volunteers over the demand when experiments were under way, a tribute to the courage of the men of our army.

It is pleasing also to record the full credit which Reed always gave to Dr. Carlos J. Finlay, who out of the 600 or 700 varieties of mosquito found on the Island of Cuba had already selected the one that was the host of the yellow fever parasite, and who believed he had proved its agency in the transmission of the disease.

The present edition includes sketches of the lives of General George M. Sternberg and General W. A. Gorgas, which we cannot regard as adding to the value of the work and which detract from the smoothness of the narrative. The sketch of General Sternberg especially, introduces a lot of extraneous matter just at a point where the reader's interest has been thoroughly aroused in the main topic of the book. The author also accepts the work of Noguchi

as a "great discovery" which sets the capstone on the monument erected by the others mentioned in the book. While we cannot but hope that Noguchi's work is correct, it is not accepted by leading authorities, and it seems to us a mistake to speak so positively of something which is still under investigation.

The story of Reed after his return from Cuba until his death is peculiarly touching, and cannot be read by anyone without deep emotion. Particularly must we all regret that Reed died before having received the honors so justly due him as the author of one of the grandest discoveries in medicine ever made. Two universities had conferred honorary degrees on him, but no provision had been made for him or his wife by our Government.

While Reed rejoiced in his discovery as a scientific man and resented the efforts of certain of those in authority to take from him the credit he so richly merited, his chief emotion was one of rejoicing that it had been given to him to do so much for humanity. His discovery was the answer to a prayer made through twenty years that he "might be permitted in some way or at some time to do something to alleviate human suffering." Surely no more gracious or complete answer was ever given to the prayer of a righteous man!

Sketches of the other members of the Yellow Fever Commission of which Reed was head are also given.

There are a number of typographical errors seen in proper names, but otherwise the book is well put together. An index would greatly improve the book for reference. It should be in the library of every physician and can be read with advantage, by professional as well as nonprofessional persons. Books of this sort should be in the waiting rooms of physicians, and efforts made to bring them to the attention of the laity.

The life of Reed is an inspiration not only to those engaged in research, but to all who love their fellow men and desire to see progress and humanity triumph in the world.

✤

Practical Chemical Analysis of Blood. *Victor C. Myers. Second Edition. St. Louis: C. V. Mosby & Co.,* 1924. Cloth. Price, $5.00. Pp. 232.

In this book are collected, in a well organized whole, tested and reliable methods for the determinations of the principal chemical constituents of the blood, together with a chapter on some miscellaneous blood determinations, one on quantitative micro-methods of urine analysis and an appendix of various tables.

The newer methods have been given precedence following the recent advances in the study of blood composition and the applications to biochemical and clinical work. If this compilation of methods alone were considered the book would have a definite use as a ready handbook for laboratory workers. The value of the book however has been greatly increased by the author's treatment of the clinical contacts for each particular blood constituent in the section immediately preceeding the detailed discussion of methods for the determination of that constituent. The clinical relations are shown by actual clinical data which give the user of the book not only the possible relations of a clinical nature but also point out both the clinical and technical sources of error of such determinations.

As is stated by the author many of the methods described require accurate apparatus and trained chemical judgment, so that blood analysis is far from being a series of routine tests at present. This factor necessarily limits the use of the book, but for the investigator or for the clinical laboratory this books offers valuable and concise information supported by a liberal bibliography.

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Charts and Graphs.—An Introduction to Graphic Methods in the Control and Analysis of Statistics. *Karl G. Karsten, B.A. (Oxon.) New York: Prentice-Hall, Inc.,* 1923. Pp. 724. Price, $6.00.

Chart making is an art which all health workers can practice with profit. The use of charts is now perhaps most familiar to vital statisticians, health officers and sanitary engineers, and these particularly will find this book of great value. Although it is designated as an introduction to graphic methods it goes much further than that and really constitutes for the student of the subject a complete text book. For the beginner or the amateur it is nevertheless a practical guide. An effort is made throughout to eliminate the mystery that often attaches to the presentation of scientific subjects, and this does much to make the book useful to those who have a reasonable mind and but little mathematical training.

The first part discusses the nonmathematical

charts such as maps and diagrams, and the familiar bar charts, pin charts and other simple graphic analyses of rate of change. This portion should be suggestive to health workers of new forms for presenting vital and other statistics. The discussion of advanced charts will appeal more particularly to the specialist. This section deals with rate of change analyses, special analyses, calculating charts, and the presentation of two and three dimension data. An appendix gives valuable hints on methods of making and presenting charts, and an interesting note on "verbal charts."

Illustrations add to the clearness of presentation throughout; "profusely illustrated" inadequately represents its 498 figures. An ample index of subject matter and two indices of the illustrations make the book especially convenient for reference.

Health officers as operating executives will be particularly interested in what the author says concerning progress charts:

"From the paradise of the accountant and historian let us step into the paradise of the operating executive. The operating executive is the man who sees to it that things are done. His interest begins and ends with the job to be done, how much of it has actually been done, and how much remains to be done. When told that a job has not yet been finished, he is not interested in excuses and reasons, he is not interested in why or when the performance fell below the schedule, he is only interested in the amount remaining to be done and the job of getting it done. We shall not expect to find him satisfied with a retrospective or 'looking-backward' chart. For him the 'looking-forward' chart!

"Far and away the most 'forward-looking' chart known is the 'progess' chart. It is the product of the man who was probably the greatest engineer America has ever produced, the late Mr. H. L. Gantt. It is significant that this chart method was devised by an engineering type of mind, for it is admirably adapted to an executive control of operation. Compared with its dynamic influence on the actual control of operations, nearly all other types of charts seem to justify the assumption that the word 'statistical' is derived from the word 'static.'

"The Gantt progress-chart presupposes a definite detailed schedule or plan made out in advance and generally called the 'quota.' The chart itself merely measures the subsequent actual performance, when it takes place, against this pre-determined schedule or quota, and shows emphatically whether or not this quota is being met. The chart shows incidentally how much of each past month's quota has been accomplished, but primarily it shows how much of the cumulative or total quota to date has been accomplished. The chart never shows trend or moving total, nor does it necessarily show even the individual monthly figures; its main function is to show how much remains to be done."

The description which then follows of the construction and use of the Gantt progress chart can be read with interest by any health executive and could be applied with profit to nearly all our health organizations be they official or nonofficial.

✤

Dreads and Besetting Fears. *Tom A. Williams, M.B., C.M. Boston: Little, Brown and Company.* Price, $1.75. Pp. 217.

This book is one of the "Mind and Health" series edited by H. Addington Bruce. It is written for the layman rather than the physician, but covers topics to which the average physician is apt to give too little attention.

Normal fear is a reaction against danger, necessary for self-preservation. Fear is morbid when inappropriate to the situation which provokes it,—in other words, when aroused by nondangerous situations. A child's reaction to a certain situation depends upon the meaning he attaches to it. The entire course of one's life may be adversely influenced by morbid fears induced by supposedly well concealed prejudices on the part of parents. In spite of the fact that the sufferer may know the truth and try to reason himself out of it,—examples of which are given,—he is unable to rid himself of his phobia.

The author gives the philosophy as well as the psychology of fears, with examples taken from his own experience, and the treatment pursued. His treatment is based on common sense. He combines argument, persuasion and demonstration, a process of reëducation, in which he has been very successful. It seems evident that the personality of the physician plays a large part in the cure, and that the method might not be so successful in the hands of others, even though founded on a rational basis.

The entire book is interesting and contains much valuable advice, especially timely at this period of world upset and uneasiness.

Woman's Physical **Freedom.** *Clelia Duel Mosher, M.D., Associate Professor of Personal Hygiene, and Medical Adviser of Women, Stanford University. Third Edition Revised and Enlarged of "Health and the Woman Movement." New York: The Woman's Press, 600 Lexington Avenue,* 1923. Cloth. Price, $1.00.

The author has for many years made notable contributions to the study of college women, and to the effect on them of certain habits, clothing, etc. The third edition of this book which is now before us takes into consideration the demands on woman during the World War, and shows that she has functioned all along the line, even as a private soldier in the trenches, and made good. The book is not a treatise on personal hygiene, but deals with some of the special problems which women have to confront in looking after their health. The betterment which has come about in health with changes in the conventional style of dress are particularly noteworthy. Her demonstration of what has been brought about by the releasing of the waist line from the extreme constriction of tight corsets is particularly convincing, having extended through a period of more than 30 years during which time more than 2,000 subjects were studied.

While the entire book can be thoroughly commended to the women of our country, the chapters on Constination, Clothing, Water Drinking, Bathing, Shoes and Posture may be mentioned as being especially good. We wish for this little book a wide circulation.

✤

What is Man? *J. Arthur Thompson, M.A., LL.D., Professor of Natural History, University of Aberdeen. New York: G. P. Putnam's Sons. The Knickerbocker Press,* 1924. Cloth. Pp. 331.

If an apology be needed for giving space in a journal of public health to a book on Biology it lies in the fact that we are coming more and more to look into fundamentals for the explanation of things at the present day. Moreover, it can be said that this book lays great stress on public health, and the reviewer believes that it can be read with great advantage by all those making a profession of public health. Not only are some of the weakest points in our make-up explained by evolution, and the fact that our mind has developed faster than our body, but for the future the author points out that improvements in health are sure to repercuss on the general vigor of the stock.

It is shown that man has rebelled against nature's régime, his mind having carried him beyond the ability of the body in many ways and led him to ignore or neglect many things which are needful to the body. While he has put nature's laws under his feet, as it were, he has not replaced them by an effective rational and social selection. "Man has not learned to select with sufficient stringency in the direction of health."

Man has lost the faculty seen amongst lower animals of resting. He has the socialized mania for industry seen in certain bees, which leads in these insects to brain exhaustion and death through overfatigue. A number of the lower animals secure something of a continuance of youth by what may be called "spring cleaning," others sleep for long periods, some get rid of parts of their bodies, or of offending members. These doors are closed to man to a great extent, but much can be done by insisting on more holidays, more change and more real recreation. Wild animals show constantly, "a bouyant self mastery, an abandon of vigor, an absence of fatigue, a freedom from worry and bad habits," whereas man shows the same characteristics only occasionally. Senility in man can be avoided to a considerable extent, he can cultivate the resting habit, and it is within his power to secure changes which make for invigoration and rejuvenescence. He can, at least, "determine what he will *not* die of."

Like all recent writers on evolution, the author points out the dangers of the road that we are treading and the inevitable conflict between humanitarianism and the welfare of the race. In 1916 there were living 600 weak-minded descendants of the Juke sisters, of whom only three were in custodial care. "It is not the rarity of Christian charity that we have reason to lament, but its frequent short sightedness."

He is especially tender in his consideration of what we owe to the lower animals, holding not only that we have received much from them in various ways, but that they have taught us many of our better qualities, especially those connected with the family and society. Even in our conflicts with beasts of prey we developed courage and resourcefulness. It is a mistake to lay too much emphasis on the apartness of Man. We should recognize his solidarity with the rest of creation, and bear in

mind the continuity of the great historic process, which not only explains the significance of what we have passed through, and why something of the beast may lurk in the best of us, but also assures us that our past has been an ascent and not a descent.

He holds that we give insufficient attention to variations, since they often mean new departures in a progressive direction. Peculiar people who have special gifts are called cranks. "We are past masters of the art of frost-biting buds."

The book is a most thoughtful one and full of meat from cover to cover. It might very well be described as evolution from the standpoint of the Christian religion. While the author has an international reputation as a scientific man, he states clearly his conviction that there is no radical conflict between "empirical or descriptive formulation, which is the aim of science, and the transcendental or philosophical interpretation which is characteristic of the religious outlook." The scientific method, he holds, is not the only pathway toward an appreciation of reality, since truth may be approached through feeling and obedience.

One is tempted to quote at length, but since it would be impossible, even in this way, to give an adequate conception of the book, it remains only to recommend that it be read.

✤

Industrial Health. *Edited by Geo. M. Kober, M.D., Washington, D. C., and Emery R. Hayhurst, M.D., Columbus, Ohio. Philadelphia: P. Blakiston's Son & Co.*, 1924. Pp., 1184. Price, $15.00.

The authors, with the assistance of sixteen contributors, have reviewed and greatly extended Kober and Hanson's "Diseases of Occupation and Vocational Hygiene." The new book is a monumental masterpiece, and will be a necessary addition to the reference library of every health officer and physician who is interested in industrial hygiene.

The book has been divided into five general divisions; the first discussing the general principles of maintaining health in industry; the second considering vocational hygiene of certain industries; the third pertaining to the specific occupational diseases; the fourth to the more technical discussion of the systemic occupational diseases; the fifth dealing with the general principles of industrial health administration. A very extensive prefatory covers the evolution and development of industrial hygiene in the leading countries of the world. The index is complete. The book contains a few good illustrations and many valuable tables. The editors have doubtless spent a great deal of energy and time in covering the available literature, and by so doing have made their book an authority which will doubtless stand for many years.

✤

Louis Pasteur. *S. J. Holmes, Ph.D., Professor of Zoology in the University of California. New York: Harcourt, Brace & Company*, 1924. Pp., 246.

This is a delightfully written review of the life of Pasteur, and should appeal to the general reader fully as much as to the student of medicine or bacteriology. There have been many books written on the life of this great Frenchman, but for simplicity in the discussion of technicalities and for general literary style it is difficult to conceive of a book which could more readily command the interest of the reader. The author begins with the early life and home training of Pasteur and leads the reader through his experiments in chemistry, fermentation and the diseases of wine and silk worms into the later developments of antiseptic surgery, the studies in anthrax and the conquest of hydrophobia. The book is strongly recommended to all classes of readers.

✤

Mental Hygiene and the Public Health Nurse. *V. M. MacDonald, R.N. Philadelphia: J. B. Lippincott*, 1923. Pp 67. Price, $1.50.

The object of this book is to stimulate an interest on the part of public health nurses in mental hygiene. The field nurse who is devoting her time to the campaign against tuberculosis, to the movement to lower the infant death rate, and to other public health purposes can do much constructive work in the prevention of mental diseases through her contact with the public providing she has had some insight into the problem of mental hygiene, and has a sympathetic response when mental cases are met in the course of her daily routine. The nurse has always been an agent of prevention and education, and it has now been thoroughly proven that these features are applicable to the diseases of the mind.

National Health **Series.**—The first five volumes of the widely-advertised National Health Series are now ready for distribution. This series of twenty volumes, on all phases of health, has been written by leading authorities in order to provide the laity with professionally sound information at a low cost. Public health workers will find them valuable to recommend to teachers, women's clubs, men's clubs, and to other groups or individuals in their community requiring interesting, nontechnical and reliable information.

The volumes are four by six, averaging seventy pages each, and are bound attractively in flexible fabrikoid. The titles in the National Health Series and a description of the contents follow. They are on sale by the American Public Health Association.

*Man and the Microbe; How Communicable Diseases are Controlled. By C.-E. A. Winslow, Dr.P.H.; Professor of Public Health, Yale School of Medicine.

A description of germs and germ diseases and how they are spread, together with practical methods of disease prevention by means of sanitation.

*The Baby's Health. By Richard A. Bolt M.D., Gr.P.H., Director, Medical Service, American Child Health Association.

How to care for the baby so that it will be healthy, will develop properly, and be strong and free from disease.

†Personal Hygiene; The Rules for Right Living. By Allan J. McLaughlin, M.D.; Surgeon United States Public Health Service.

Practical suggestions as to how to apply personal hygiene to promote health and get the most out of life.

*Community Health; How to Obtain and Preserve It. By D. B. Armstrong, M.D.; Sc.D.; Executive Officer of the National Health Council.

An outline of what the community should do for the health of its citizens and what each person should do to make his community a healthy place.

*Cancer; Nature, Diagnosis and Cure. By Francis Carter Wood, M.D.; Director, Institute for Cancer Research, Columbia University.

The best statement about cancer ever written for the laity. It tells what it is and how to know it and have it cured.

Love and Marriage; Normal Sex Relations; By T. W. Galloway, Ph.D., Litt.D.; Associate Director of Educational Measures. American Social Hygiene Association.

The various elements, biological, social, and sexual, which make up a successful and happy married life.

†**Food for Health's Sake;** What to Eat. By Lucy H. Gillett, M.A., Superintendent of Nutrition, Association for Improving the Condition of the Poor, New York.

An outline of what and how to eat for maximum efficiency and health building.

Health of the Worker; How to Safeguard It. By Lee K. Frankel, Ph.D.; Chairman, National Health Council.

Hygiene and sanitation in factory and shop and how industrial workers can protect and promote their health.

Exercises for Health. By Lenna L. Meanes, M.D., Medical Director, Women's Foundation for Health.

Illustrative material giving to individuals the type of exercise best suited to each one's personal needs.

Venereal Diseases; Their Medical, Nursing, and Community Aspects. By W. F. Snow, M.D., General Director, American Social Hygiene Association.

A nontechnical discussion of cause, spread, treatment, cure, and prevention of each of these diseases and related social hygiene questions.

†**The Human Machine;** How the Body Functions. By W. H. Howell, Ph.D., M.D., LL.D., Sc.D.; Associate Director, School of Hygiene and Public Health, Johns Hopkins University.

A nontechnical, literary description of the anatomy and physiology of the human body, the most wonderful machine of all.

†**The Young Child's Health;** By Henry L. K. Shaw, M.D.; Clinical Professor, Diseases of Children, Albany Medical College.

How to care for the health of the runabout child from two to six years of age.

The Child in School; Care of Its Health. By Thomas D. Wood, M.D.; Professor of Physical Education, Teachers College, Columbia University.

Promotion of health habits in children of school age and exactly how to go about it.

* Now ready.
† Promised for April.

Tuberculosis; Nature, Treatment, and Prevention, by Linsly R. Williams, M.D.; Managing Director, National Tuberculosis Association.

Covers the whole field of tuberculosis, the cause, spread, treatment, prevention and duties of citizens, patients, and the community.

***The Quest for Health;** What It is and Who Can Help Secure It. By James A. Tobey, M.S.; Administrative Secretary, National Health Council.

A statement of what health is, how it may be obtained, and a description of the actual help which the government, states, municipalities, physicians, and voluntary health agencies can give to individuals.

Your Mind and You; Mental Health. By Frankwood E. Williams, M.D., Medical Director, National Committee for Mental Hygiene.

Describes how your mind can be a friend or enemy and how it can be enlisted as your ally.

†**Taking Care of Your Heart.** By T. Stuart Hart, M.D., President Association for the Prevention and Relief of Heart Disease, New York.

How to avoid and prevent heart troubles, which form the leading cause of death in this country.

The Expectant Mother; Care of Her Health. By R. L. DeNormandie, M.D., Specialist, Boston, Mass.

The health care needed during pregnancy in order that both mother and baby may be healthy and well.

Home Care of the Sick. By Clara D. Noyes, R.N.; Director of Nursing, American Red Cross.

What to do in the home when illness is present. Practical suggestions for the care of the sick.

Adolescence; Educational and Hygienic Problems. By Maurice A. Bigelow, Ph.D., Professor of Biology and Director School of Practical Arts, Teachers College, Columbia University.

The scientific and sociological aspects of adolescence to explain the proper transition from childhood to adult life.

□

Pan American Conference on Child Welfare.—The forthcoming Pan American Conference on Child Welfare will be held at Santiago de Chile, October 12 to October 19, 1924. The congress is being held under the patronage of the Government of Chile.

The reduction of infantile mortality is one of the most pressing of the public health problems awaiting solution in Latin America today. Keen interest is being manifested in all the countries comprising the Pan American Union in any and all measures which will tend toward the reduction of infant mortality. Several of the countries are already actively engaged in the application of measures tending toward the reduction of infantile mortality, and others are studying these problems with a view of undertaking campaigns in the near future.

The satisfactory results obtained in the United States are a source of constant interest and study by not only health authorities, but by other officials, persons of prominence and by various societies and organizations, some of which are being formed for the specific purpose of combating infantile mortality, and others are now diverting their efforts from the object for which they were originally formed to the important problems of protecting and promoting child life.

Official and social agencies of the United States cannot fail to be interested in this problem of their neighbor Republic and can, out of the fullness of their experience, offer much assistance which will, without doubt, be sympathetically received and will serve to render possible the avoidance of much delay, expense and waste of effort which must necessarily result if campaigns are undertaken without the benefit of experience of the United States and other countries that have attained such marked success in solving their own child health problems. If such persons or organizations as may be interested or are desirous of contributing papers or sending representatives will communicate with General Secretary of the American Public Health Association, 370 Seventh Avenue, New York City, or with Dr. J. D. Long, Assistant Director Pan American Sanitary Bureau, Pan American Union, Washington, D. C., information will be gladly and freely furnished.

HEALTH OFFICER'S EXCHANGE

SURVEYING GERMANY'S CHILDREN

At the request of the Editor, Dr. Haven Emerson of Columbia University, has prepared a brief outline of the results of a personal investigation recently made in an endeavor to discover the facts concerning the health condition of the children of Germany.

At the request of the American Friends (Quakers) Service Committee I made a rapid tour through some of Germany's larger cities December 23–January 3) to try to discover the facts as to the condition of the children. While the representatives of the Quakers in Germany have been reporting a serious and increasingly threatening condition of hunger, deprivation and disease among children in the industrial communities, large and small, tourists during last Summer and Autumn had brought home stories of well-being and even luxury and extravagance. To add to the appearance of accuracy in the statements of the well-to-do business and pleasure travelers were the latest published government records of deaths which showed for 1921 an unprecedently low general mortality, tuberculosis and infant mortality rates.

Experience in our cities in this country led me to believe that four professional groups (doctors, nurses, social workers and school teachers) would give me reliable first hand information, which, if in agreement with recent records from the offices of vital statistics, would have to suffice for me to base an opinion upon, since original research upon the persons of a multitude of children was out of the question in the time at my disposal.

By careful checking of observations with a colleague, a physician of long experience in public health work who accompanied me throughout my trip, I became convinced that the information we obtained was quite as accurate and trustworthy as could be gathered in any of our own cities.

In each city or area studied (Berlin, Breslau, Dresden, Munich, Frankfort a/M., Cologne, Coblenz and Opladen), the official records, in some instances actually including deaths and notifiable diseases up to December 31st, were studied. The important data obtained regularly were, in addition to population and its growth; marriages, births, deaths, especially tuberculosis by form, age, sex and incidence, infant mortality, unemployment, milk and meat consumption, school attendance records, causes for school absences, condition of clothing and nutrition as checked by school physicians.

With physicians, hospitals, dispensaries, sanatoria, orphanages, day nurseries and lodging houses were visited.

With nurses, a hundred homes were visited, selected at random from the middle class, the skilled tradesmen and the day laborer class.

With the social workers, the soup kitchens, employment agencies, relief bureaus and also homes of those receiving public dole were visited.

From school teachers (schools were closed during my trip) were obtained the reports of a recent survey, social and medical, of the children admitted to school and the reasons for their exclusion.

The important observations were that:

The favorable general death rate in 1921 was due to the same causes as a similar rate in all countries which had experienced the great losses of the influenza epidemics of 1918–1920. The continued low rate in 1922 and 1923 was due in considerable degree to the sudden reduction in the age group of the population which gives about one-fourth of all deaths, *i.e.*, children under two years of age, this rapid alteration in population of infancy resulting from the drop in the birth rate from 29 per 1000 in 1920-21 to 15 in the last quarter of 1923 in many large cities.

Furthermore, it was found that a relatively low tuberculosis death rate may occur at the same time that there is a widespread increase in infection with the tubercle bacillus and rapid invasion of the lungs among children at ages in which it is uncommon to find marked pulmonary lesions.

Unemployment involving 10-40 per per cent (average 25 per cent) of the population of the cities, resulting in a very low living standard made barely possible by receipt of public dole amounting to one-half the average wages of an unskilled or day laborer, *shortage of milk* supply to but a fraction (1/8–1/20) of the usual pre-war per capita amount, which was less than a half liter, thus permitting only expectant mothers, nursing mothers, infants up to two and one-half years, and sick persons in hospitals to have any milk, *overcrowding* in unfit premises, where lack of heat, light, cleanliness and opportunities for segregation of the sick from the well, are almost universal, *reduction* in hospital, dispensary, sanatorium, public bath and other necessary services, all have combined to develop a condition among children that is characterized by:

1. Undernourishment with marked anemia (55-65 per cent hemoglobin), lack of resistance and endurance in those who appear in fair condition, and expressing itself in advanced and very early rickets, increasing prevalence of scurvy, occasional pellagra, keratomalacia and edema in the more serious cases. Stunting, physical and mental, prevails so widely, to the extent of about two years' deficit in height, weight and scholarship that it attracts attention only when checked against pre-war anthropometric records.

2. Skin diseases, particularly impetigo, scabies and body lousiness, made almost inevitable by the lack of clean underclothing, lack of warm water and soap, the necessity of sharing beds and bedding with other children and adults, and the poor general state of vitality of tissues and vigor of circulation.

3. Tuberculosis which has increased three to six fold among children under four years of age, occurs to such an extent that it is common to have one-fourth of the beds in children's hospitals in use for the acute pulmonary form, has caused an increase of 14 per cent in the death rate from this disease and an increase of 29 per cent in the new patients applying at the special clinics for this disease in the past twelve months.

Twenty per cent of the children applying for admission to school for the first time in September 1923 were rejected because of physical weakness. Well over 2,000,000 children of school age are without adequate food and

clothing to permit of growth and escape from disabling infection from now until July. At least 500,000 more of pre-school age are in an equally serious condition.

The public health services are working well and in Cologne particularly an admirable health organization was found with all essential functions suitably provided for.

The professional classes, the teachers and practitioners of medicine are suffering a progressive deterioration of standards of living which has made productive scientific work difficult and often impossible.

PUBLIC HEALTH LABORATORY NOTES

C. C. YOUNG

Human Tuberculosis Due to Avian Tubercle Bacilli.—A report of two cases with septic reaction and urinary turbidity. The urinary sediment contained polymorphonuclear leucocytes and a large number of acid-fast rods. The sediment did not affect guinea pigs but chickens developed tuberculosis. It seems that avian tubercle bacilli prefer to localize in the kidneys of man. One case was treated successfully by avian tuberculin and the other healed spontaneously. Infections in chickens is through the digestive tract and the infection is spread by the feces. In man the transmission is by the ecz.—G. Joannovic, Wien. Med. Wchnschr., Jan., 1923, 73:22; *Am. Review of Tuberculosis*, 8:104 (Jan.), 1924. M. C.

✤

Diagnostic Value of the Pandy Reaction in Tuberculosis Meningitis.—Eight cases of tuberculous meningitis, five of other forms of meningitis, three of encephalitis lethargica, two of chorea, and eight with various lesions of the brain and spinal cord, were studied clinically and also by numerous laboratory tests on the cerebrospinal fluid. The Pandy test was uniformly positive in the cases of tuberculous meningitis which was not true of the cases suffering from the other conditions. The discovery of a positive Pandy test in a given cerebrospinal liquid necessitates the careful ruling out of the tuberculous meningitis.—U. Provinciali, la Pediatria, 31:409 (Apr. 15), 1923. *Abstrts. Am. Review of Tuberculosis*, 8:110 (Jan.), 1923. M. C.

✤

The Colorimetric Determination of pH of Small Amounts of Fluid.—Another technic is described for the making of determinations of pH with a single drop of solution to be tested. The author uses colorimetric methods with buffer standards, and glass rings with cover glasses sealed on the bottom for containers. The background is opal glass.—J. H. Brown, *J. Lab. and Clin. Med.*, 9:239 (Jan.), 1924. M. S. M.

✤

A Skin Test for Susceptibility to Scarlet Fever.—A Berkefeld V filtrate of a culture of hemolytic streptococci isolated from a case of scarlet fever was used. Tests were made by inoculating 0.1 c.c. of a 1:1000 dilution intracutaneously. The authors found that 41.6 per cent of persons with no history of scarlet fever gave positive results and that convalescent scarlet fever patients tested showed negative reactions. In the two instances in which it was possible to observe the test before and after an attack of scarlet fever, it was positive before the attack and negative during convalescence.—G. F. Dick and Gladys H. Dick, *J. Am. Med. Assoc.*, 82:265 (Jan. 26), 1924. C. C. Y.

✤

Extinction Tests in Scarlet Fever.—An extensive survey of the literature is given which shows a great difference of opinion as regards the efficacy and specificity of the extinction phenomenon of Schultz-Charlton. The authors undertook a series of experiments to evaluate this test with the idea of applying it as aid in diagnosis of borderline cases of scarlet fever. They worked with known scarlet fever cases using various solutions and found that convalescent scarlet fever serums did not cause blanching in scarlet

fever cases with rash when one c.c. was inoculated intradermally, while normal serums did. A number of serums were used from suspected scarlet fever cases, all of which caused a blanching. None of the cases subsequently developed scarlet fever. One conclusive instance is cited. A physician from whom serum had been collected about four weeks previous developed mild scarlet fever. Serum collected on second day of his illness gave no blanching while the old serum did. A total of 133 cases were studied and compared with 22 control cases. The authors conclude that there is present in the blood of normal, and some convalescent scarlet fever serums a substance which, when injected intradermally will cause the rash of scarlet fever to disappear at the seat of injection.—J. A. Toomey and J. D. Nourse, *Am. J. Dis. Children*, 27:95 (Feb.), 1924. M. C.

✤

Correlation of Citrate Utilization by Members of Colon-Aerogenes Group with Other Differential Characteristics and with Habitat.—Following work on the ability of the colon-aerogenes group of organisms to utilize the citrate radical as a source of carbon, the author has made a further study comparing the ability of these organisms to utilize citrate as a sole source of carbon with the source of the cultures in nature, with glucose metabolism as brought out by the methyl red and Voges-Proskauer tests, and with the ability to utilize the nitrogen in the purin ring of uric acid. One hundred ten cultures, isolated from soil and fecal specimens, were employed. The results confirmed previous work and also disclosed certain soil strains differing from the fecal methyl red positive type by their growth in citrate medium. Growth in citrate correlated more closely with the source of the culture than did other differential tests, and the medium was found to be especially useful in assigning cultures to proper groups when the methyl red and Voges-Proskauer tests showed irregularity and variability.—Stewart A. Koser, *J. Bact.*, 9:59 (Jan.), 1924. A. E.

✤

The Value of the Kahn Precipitation Test in the Diagnosis of Primary Syphilis and its Adaptation to Local Fluids.— The authors report a special micro-procedure they have devised which adapts the Kahn Precipitation Test to the examination of fluids obtained from primary sores. They conclude that the micro-Kahn test is adaptable to the early diagnosis of syphilis; the test is simple, practicable and reliable; the substance reacting in the Kahn test appears early in the local lesion and is present before the blood becomes positive in the Kahn and Wassermann tests; the micro-Kahn test should not be used as substitute for dark-field examination, but is of especial value where the dark-field examination is negative.—J. A. Elliott and L. C. Todd, *Arch. Derm. and Syph.*, 9:208 (Feb.), 1924. P. L. K.

✤

A New Sulfur Containing Amino Acid Isolated from the Hydrolytic Products of Protein.—The author previously isolated and described an amino acid with the apparent formula $C_5H_{11}SNO_2$. The article describes a few experiments in which the urinary sulfur has been determined, after the injection of .5 and 1.0 gram of the material. The results strengthen the other evidence which tends to show that the compound may be a primary product of protein digestion.—J. H. Mueller, *J. Biol. Chem.*, 58:373 (Dec.), 1923. J. M. S.

✤

Studies with the Folin and Wu Blood Sugar Determination.—The article lays further emphasis on the precaution which Folin and Wu considered necessary in their quantitative blood sugar determination, namely, the use of a standard solution which contains approximately the same amount of dextrose as the blood filtrate being tested. If this test on most blood filtrates is never read against a standard but that equivalent to 200 mg. or 100 mg. of dextrose per 100 c.c. of blood, a large error will result in many instances. Other errors may be demonstrated but only that due to the irregularity of the curve of color dilution of the blue color being dealt with is of sufficient magnitude to be of any importance.—V. E. Rothberg and F. A. Evans, *J. Biol. Chem.*, 58:435 (Dec.), 1923. J. M. S.

✤

A Modified Folin and Wu Blood Sugar Method.—The article further discusses the error here introduced into the Folin Wu method for blood sugar determination when the color of the standard does not match

that of the unknown almost exactly. The author has designed a new sugar tube to be used in this test which is graduated so that the unknown can be diluted with water until it nearly matches the standard. These tubes can be obtained from Emil Greiner Company, New York. It is also pointed out that it is very necessary to carry out the dilution of the standard and unknown with water at the same time or within five minutes.—V. E. Rothberg and F. A. Evans, *J. Biol. Chem.*, 58:443 (Dec.), 1923. A. B. H.

✤

The Determination of Chlorides in Blood and Tissues.—In the method presented the sources of error have been reduced by so simplifying the technique that the entire operation is carried out in a single vessel. The proteins are destroyed, and the chloride is precipitated by heating with concentrated nitric acid containing known amounts of silver nitrate and the excess silver is titrated with sulphocyanate under the condition worked out by Whitehorn for performing the Volhard titration accurately in the presence of silver chloride precipitate. The micro method for blood is as follows:

1 c.c. of blood is placed in a 100 c.c. Pyrex test tube and 3 c.c. of concentrated nitric acid containing $AgNo_3$ in 0.05 H concentration is added. The tube is covered with a watch glass and the mixture is digested until the solution above the AgCl precipitate is clear and light yellow in color. Then 6 c.c. of a 5 per cent solution of ferric alum in water are added, the solution is cooled and the excess silver is titrated with 0.02 N sulphocyanate. A correction of 0.04 c.c. substracted from the 0.02 N sulphocyanate is used. Calculations:

$$\text{M—Eq. of Cl per liter} = \frac{20(7.50 - \text{c.c. 0.02 N CNS})}{\text{c.c. of sample}}$$

$$\text{Gm. NaCl per liter} = \frac{1.170(7.50 - \text{c.c. 0.02 N CNS})}{\text{c.c. of sample}}$$

—Donald D. Van Slyke, *J. Biol. Chem.*, 58: 523 (Dec.), 1923. A. B. H.

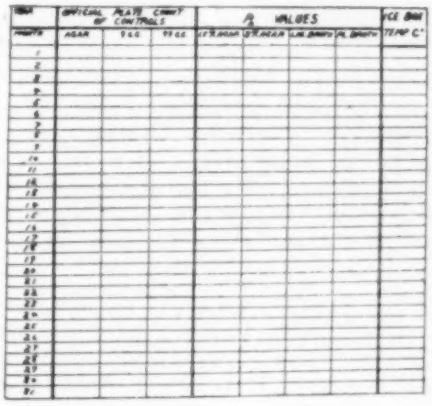
NOTE

Each month we desire to publish in the Laboratory Notes two or three short articles (not exceeding 250 words) dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the fifteenth of each month.—C. C. Young.

A Color Test for Chloroform and Chloral Hydrate.—Method: 3 to 5 c.c. of concentrated (17 to 25 per cent) NaOH solution in a test tube are superimposed with a layer 2 mm thick of pyridine. A small quantity of the substance or a drop of the solution to be tested is added and the contents of the tube are raised to the boiling point, shaking well to avoid bumping. If the color has not appeared when the mixture has boiled a few seconds, the test tube should be shaken vigorously and then held still until the pyridine layer has risen to the surface. If $CHCl_3$, etc., are present the pyridine will be colored from a pink to a clear deep red. 0.1 c.c. of 0.0014 per cent solution of chloral hydrate gave dark red-positive for quantities below 0.014 mg. $CHCl_3$ was detected in amounts of 0.005 mg. The test is applicable to identify substances which produce chloroform, bromoform, iodoform or the grouping R-$CHIg_3$ under given conditions and in amounts inferior to .005 mg.—J. H. Ross, *J. Biol. Chem.*, 58:641 (Dec.), 1923. A. B. H.

✤

Submitted by Dr. James R. Bean, Director of Laboratories, Jefferson County Board of Health, Alabama—In the Division of Laboratories of the Jefferson County Board of Health our monthly quota of milk for bacterial analysis varies from 600 to 800 and water from 50 to 100. We have dropped the term "Bacteria per c.c." and use the term "Official Plate Count." The following chart we have found to be of great value in keeping up with our controls in this work. The chart is self-explanatory and its use can readily be seen at a glance.



VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Mortality in 1923. Metropolitan Life Insurance Company, Industrial Department.—Nineteen twenty-three was distinguished as one of the best health years in the history of the United States and Canada, this conclusion being based on the health record of about 15 million Industrial policyholders of the Metropolitan Life Insurance Company—nearly one-seventh of the population of these countries. The death rate was 8.9 per 1,000 in 1923 as compared with 8.8 in 1922 and 8.7 in 1921. These three years are the best in the sanitary history of the countries as proved by the rates for their Industrial population for prior years: 1919 (10.6); 1917 (11.6); 1913 (12.0); and 1911 (12.5).

For a number of diseases of major public health interest such as typhoid fever, diphtheria, tuberculosis, diarrheal diseases and puerperal septicemia the rates were lower than ever before. The rate for typhoid fever was 5.1 per 100,000, a reduction of 10.5 per cent since 1922 and 77.6 per cent since 1911. That for diphtheria (15.2 per 100,000) was the lowest ever recorded among Industrial policyholders. The 1923 figure of 110.2 per 100,000 for tuberculosis represents a decline of 3.5 per cent since 1922. There has been a continuous fall in the mortality since 1918, when a rate of 189.0 was recorded. The low mortality recorded for diarrheal complaints (9.6) marks the continuance of the distinct downward trend that has now been in evidence for a considerable period of years. There was a gratifying fall in the mortality from puerperal conditions in 1923 with a rate of 17.9 per 100,000 as compared with 19.0 in 1922 and 23.0 in 1920.

The most conspicuous examples of rising death rates in 1923 are measles, whooping cough, influenza, pneumonia, heart diseases, homicides and accidents. This past year was a "measles" year with a death rate of 8.2 per 100,000 as compared with 4.3 in 1922 and 3.2 in 1921. The whooping cough rate showed a pronounced rise over 1922, but the mortality was lower than for the majority of the years of the last decade. Influenza became one of the major causes of death in 1923 as the result of its epidemic prevalence during the first quarter. This disease together with pneumonia was responsible for more than 20 per cent of the total mortality during the first three months. Heart diseases again showed an increased death rate in 1923 and was the leading cause of death as in 1922. The homicide rate rose from 6.3 per 100,000 in 1922 to 7.3 in 1923, being the highest ever recorded with the exception of 1917. The death rate from alcoholism (3.0 per 100,000) was the highest since 1917. The accident death rate increased from 58.0 in 1922 to 62.7 in 1923. Automobile accidents are largely responsible for this increase. The 1923 death rate of 15.4 shows a rise of about 50 per cent over 5 years ago and of about 300 per cent over ten years ago. The rates for cancer, cerebral hemorrhage, chronic Bright's disease and suicides were substantially the same as those for 1922.—*Statistical Bulletin*, M. L. I. Co., (Jan.) 1924.

✤

Health Situation in 1923.—*Boston.* The death rate in Boston during 1923 was 14.93 per 1,000, the second lowest in the history of the city, the rate for 1921 having been 13.49. Deaths of infants under one year in 1923 produced the lowest infant mortality rate (83.32) in the history of Boston. Heart disease, cancer, violent deaths and deaths of persons over sixty years of age were the highest ever recorded in the Health Department. Deaths from diabetes and broncho-pneumonia continued high, while deaths from alcoholism were the highest since 1918. *Boston Health Dept. Monthly Bull.*, 13:1-2, (Jan.) 1924.

Buffalo. The death rate for 1923 in Buffalo was 13.0 and the infant mortality rate was 89.57. The principal causes of death were heart disease, pulmonary tuberculosis, Bright's disease and pneumonia. The communicable diseases showed a reduction in diphtheria, scarlet fever and influenza, and a periodic flare up in measles and whooping cough. Heart disease, kidney disease and cancer were practically the same as the year before, while apoplexy showed an increase of approximately 40 per cent. *Buffalo Sanitary Bull.* 16:89, (Dec. 31) 1923.

Dayton. The death rate in 1923 was 11.7 per 1,000 as compared with 10.9 for 1922 and 1921. The infant mortality rate was 80 as against 68 in 1922 and 75 in 1921. There were 69 deaths from influenza in 1923 and 8 in 1922, 249 deaths

from organic heart disease as compared with 168 in 1922. Deaths from accidents, suicide, homicide and Bright's disease decreased noticeably. *Dayton Health Bull.*, (Jan. 15) 1924.

Detroit. The death rate for Detroit from all causes rose from 11.6 per 1,000 population in 1922 to 12.4 in 1923. The rise was due chiefly to deaths from pneumonia, which was the most important cause of death. The pneumonia death rate was 184 per 100,000 in 1923 as compared with 148 in 1922. The birth rate declined from 27.2 in 1922 to 26.8 in 1923, while the infant mortality rate was practically stationary, (87.7 per 1,000 births in 1923 and 87.6 in 1922). Smallpox showed itself preëminent in the communicable disease situation. There were 256 cases in 1923 as compared with 85 in 1922. The 1923 typhoid fever death rate was 4.0 per 100,000 population, the lowest in the history of the city. The diphtheria death rate was 19.5, with one exception the lowest recorded for the city. The 1923 tuberculosis death rate was 95.5 as compared with 99.8 in 1922 and 94.2 in 1921. *Detroit Weekly Health Review*, (Jan. 12) 1924.

Fall River. The number of deaths recorded for 1923 in Fall River was the lowest since 1890. There were 279 fewer deaths in 1923 than there were in 1922, the decrease being due mainly to the decrease both in the number of deaths from communicable disease and the number of deaths of infants under one year of age. The 1923 figures for lobar pneumonia were the lowest since it was added to the list of reportable diseases in 1917. There was a drop of approximately 50 per cent in the number of cases and deaths from measles as compared with the previous year. The increase in the tuberculosis deaths was due probably to more careful checking up. *Fall River Monthly Bul.* X, (Jan.) 1924.

Lincoln, Nebraska. The total death rate for Lincoln, Nebraska in 1923 was 11.9 per 1,000 as compared with 12.6 in 1922. This drops to 9.5 if nonresidents are excluded. The birth rate increased slightly, being 24.8 in 1923 as against 23.8 for 1922. The infant mortality rate of 53.5 was remarkably low. The mortality from tuberculosis of the lungs, organic diseases of the heart and pneumonia showed definite decreases while the mortality from whooping cough, diphtheria, nephritis and Bright's disease, and cerebral hemorrhage increased somewhat. *Lincoln Bull. of Department of Health*, 4-5, (Jan.) 1924.

Newark. The death rate in Newark for 1923 was 11.9 per 1,000, as compared with 12.1 in 1922 and 11.2 in 1921. It was well below the 5 year average of 13.8 for 1918-1922. The birth rate (25.3) was lower than any recorded during the previous 5 years, as was the infant mortality rate, 68.0. The mortality from the following causes of death was less in 1923 as compared with 1922: measles, scarlet fever, whooping cough, diphtheria, epidemic meningitis, pneumonia, apoplexy, tuberculosis (all forms), diarrhoea under 5, Bright's disease and puerperal disease. Influenza deaths, however, increased as did organic heart disease, infantile paralysis, cancer and accidents. *Newark Monthly Bull.*, 7:1-5, (Jan.) 1924.

New Haven. There was a marked reduction in New Haven during 1923 in the three diseases that are definitely preventable: typhoid fever, tuberculosis and diphtheria. Typhoid fever deaths decreased from 5.3 per 100 000 in 1922 to 4.6 in 1923, tuberculosis from 94.3 in 1922 to 79.2 in 1923, and diphtheria from 5.3 in 1922 to 4.6 in 1923. The total death rate for residents only was 11.9 and the provisional infant mortality rate 64.1. *New Haven Health Bulletin*, 51:4, (Jan.) 1924.

California. One of the most outstanding features of the California morbidity summary for 1923 lies in the decrease in influenza cases reported, 8,081 as compared with 45,433 in 1922. Other diseases showing decreased prevalence in 1923 were malaria, mumps, pellagra, lobar pneumonia and typhoid fever. On the other hand, increases were seen in the number of cases of measles, diphtheria, chickenpox, poliomyelitis and rabies. Smallpox, tuberculosis and epidemic cerebrospinal meningitis remained about equal in prevalence during both years. *Cal. Weekly Bull.*, 2:1, (Feb. 2) 1924.

✚

Irish Vital Statistics 1923.—The estimated population of the Irish Free State in the middle of 1923 was 3,165,000 persons. In 1911 the population of the 26 counties comprising the Free State was 3,139,688. Before the war the excess of births over deaths was about 25,000 to 30,000 a year, while the average yearly number of emigrants was greater still. Since the war, the annual excess of births over deaths, which was reduced to about 10,000 in 1918, has returned to the former scale, but the emigration figures have

not been as great. The estimates of population are obtained by balancing births against deaths and emigration.

In the quarter ending September 30, 1923, there were registered in the Irish Free State 15,428 births, equivalent to an annual rate of 19.5 per 1,000 and 8,741 deaths, 11.0 per 1,000. In England and Wales for the same period the birth rate was 19.8 and the death rate 9.5.—*Med. Off.*, 31:34, (Jan. 26) 1924.

✚

Vital Statistics Germany 3rd Quarter, 1923.—The birth rate for Berlin during the third quarter of 1923 was the lowest on record in Germany. The total number of births was only 8,715. The mortality was low, doubtless partly because of the decline in the birth rate. Taking the larger cities as a group, the excess of births over deaths was not as great as in the preceding quarter. In all cities except seaports where the rate was stationary, there was a decrease in the excess of births over deaths. For the large cities the birth rate for the period was 13.3 and the death rate 10.6.—*J. A. M. A.*, 82:486-487, Feb. 9, 1924.

✚

Principal Causes of Death in the United States, 1922.—The Department of Commerce announces that 1,101,863 deaths occurred in 1922 within the death registration area of the United States, representing a death rate of 11.8 per 1,000 as compared with the record low death rate of 11.6 in 1921. The continental death registration area, composed of 37 states and 13 cities in non-registration states comprised 85.3 per cent of the estimated population of the United States.

The increase in the rate from influenza and pneumonia (all forms) from 99.8 per 100,000 population in 1921 to 133.5 in 1922, more than accounts for the slight increase in the rate from all causes. Some of the other diseases for which the rates increased are cancer, diabetes, diseases of the heart, nephritis, cerebral hemorrhage, automobile accidents, accidental falls and accidental burns.

A marked decrease appears in the death rate from diarrhea and enteritis (under 2 years), which was 32.5 per 100,000 population in 1922 as compared with 41.9 in 1921. Some of the other diseases for which the rates decreased are tuberculosis (all forms), typhoid fever, puerperal septicemia, whooping cough, scarlet fever, accidental drowning and suicide.—*U. S. Dept. of Commerce*, Wash. D. C. Jan 21, 1921.

✚

Preliminary Account of an Investigation of Factors Influencing Longevity.—Questionnaires sent to people whom the newspapers announced as 95 years of age and over brought in over 300 histories, 51 of which are briefly summarized.

The total mean age of the men was 97.98±.49 years; the total mean age of the women was 98.96±.37 years. 26 of the 27 men had been married and 22 of the 24 women. 41 per cent of the 44 mothers and 38 per cent of the 37 fathers who were reported on died at age 80 or over. The mean age at death of fathers was 71.15±2.01, of mothers 72.73±1.73. The mean age at death of 31 male grandparents was 85.08±1.80, of 33 female grandparents, 82.50±1.97. The living brothers and sisters of the subject group are themselves unusually long lived. Of the brothers 6.4 per cent are still living at a mean age of 78.21±2.56 while of the sisters, 13.9 per cent are still living at a mean age of 78.57±2.42 years. It appears that the brothers of extremely long-lived persons live on the average 17½ years longer than the general population male, and the sisters at least 9.28 years longer on the average than the general population female. Of 26 men 14 (54 per cent) had used alcohol as a beverage throughout their lives and 12 (46 per cent) had been total abstainers. Of 19 women furnishing information 13 (68 per cent) were total abstainers and 6 (32 per cent) were moderate users. 50 per cent of the 26 men had never used alcohol in any form. The 25 persons who were total abstainers had an average of 6.76 children per family and the 20 persons who used alcohol had 7.5 children per family.—Raymond Pearl, *J. A. M. A.*, 82:259-264, (Jan. 26) 1924.

✚

Vital Statistics. England and Wales 1923.—The year 1923 seems to have been the healthiest on record in England and Wales, although the complete figures are not yet available. Some of the death rates for the past 13 years are: 14.6 per 1,000 in 1911, 13.3 in 1912, 13.8 in 1913, 13.7 in 1919, 12.4 in 1920, 12.1 in 1921, 12.9 in 1922 and 11.8 in 1923. London had the lowest death rate

on record, 11.3 in 1923 as compared with 13.4 in 1922 and 12.4 in 1921. The large cities in England showed a similar improvement: 11.6 in 1923 as compared with 13.0 in 1922 and 12.3 in 1921. The health of infants was remarkably good, the 1923 rate of 70 being the lowest ever recorded, 1922 coming next with 77. The birth rates are still falling steadily, dropping from 22.4 in 1921 to 20.4 in 1922 and 20.2 in 1923. There has been a remarkable decline in the notifiable infectious diseases with the exception of typhoid fever, puerperal fever and smallpox. The number of cases of smallpox have risen from 262 in 1919, 243 in 1920, 311 in 1921, 967 in 1922 to 2461 in 1923.—*J. A. M. A.*, 82:314, (Jan. 26) 1924.

✤

Public Health in Prague.—The crude death rate for 1922 was favorable, amounting to 12.24 per 1,000. There are still, however, great prospects open for its further reduction. Tuberculosis, which has declined enormously since the close of the war, still causes 16 per cent of the deaths. The chief reason seems to be in the bad housing conditions of the city, since there has been a considerable increase of population without providing the necessary housing facilities. The infant mortality ranges from 120 to 250 in different districts. The city shows a favorable record in the incidence of contagious diseases. Typhoid is still a problem for Greater Prague, due to the unhygienic water supply. This is being remedied, however.—*J. A. M. A.*, 82:224, Jan. 16, 1924.

✤

Public Health in Palestine, 1922.—There is evidence of extensive improvements in health conditions in Palestine under British control. The value of notification of infectious diseases, followed by visits from the medical officer of health and inspectors has been enhanced by a mobile epidemic equipment, which includes provision for the erection, where necessary, of a temporary field hospital. An outbreak of bubonic plague in Jaffa led to active measures for rat destruction there and elsewhere. An energetic vaccination and revaccination campaign dealt with 200,000 people, and pilgrims to Mecca were inoculated also against cholera. Market places, hotbeds of disease, have been overhauled and in many cases rebuilt. Medical inspections are being carried on in over 500 schools, and school clinics have been organized in several places. Ophthalmic clinics exist in 4 towns, and there is a travelling ophthalmic hospital, which last year did more work than the total record of the previous 3 years. Malaria is still the most important disease, and a very active campaign against it is in progress. There are 11 Government hospitals, and many village clinics and dispensaries. Government laboratories exist in 4 towns, Jewish laboratories in 5, and there is a Pasteur Institute in Jerusalem. Drainage systems in various towns are being planned and carried out, and enteric fever and dysentery have diminished considerably.—*Brit. M. J.*, 1:1270-1271, (Dec. 29) 1923.

Public Health in Burma, 1921.—The population of the registration area for vital statistics numbered 10,771, 190 in 1921, an increase of 9.64 per cent over 1911. The birth rate was 29.85 per 1,000 as compared with 33.78 in 1920 and 33.33 for quinquennium (31.67 corrected for 1921 population). The general death ratio for the province was 21.45 per 1,000 as compared with the corrected ratio of 27.40 for the quinquennium (1916-1920). The mortality was 19.66 in the rural areas and 35.55 in the towns. There has been a marked improvement in infant mortality. The ratio per 1,000 births was 172.06 compared with 186.65 in 1920, 216.90 in 1919 and 271.24 in 1918. In the rural areas the mortality declined from 205.33 per 1,000 births in 1919 to 177.92 in 1920 and 160.37 in 1921; in the towns from 320.99 in 1919 to 271.22 in 1920, but rose to 278.84 in 1921. Cholera was present in all districts in Lower, and in 5 out of 12 in Upper Burma, with 6 isolated cases. The total deaths numbered 3,791 (0.35 per 1,000). There was a great reduction in smallpox, from which cause 987 deaths were returned (0.09 per 1,000). Plague caused 4,403 deaths (0.41 per 1,000) and dysentery and diarrhea 9,728 (0.90 per 1,000). Enteric fever was reported as causing 231 deaths, but probably was more widely distributed. There was influenza from time to time in all parts of the province, 537 deaths occurring in towns and 112 in rural areas.—*Lancet*, 1:110-111, (Jan. 12) 1924.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Methods of Administering Iodine for Prophylaxis of Endemic Goiters.—Numerous methods employed to supply iodine deficiency, the principal cause of endemic goiter, and their efficiency are discussed. Inhalation and external application are not as efficient as internal treatment, the former because of inaccuracy of dosage, and excessive amounts may cause pulmonary edema. External application, by liquids and ointments are used for prophylactic purposes; painting with iodine should be discarded. Internal administration is effected by: iodized table salt, iodine in chocolate tablet, sirups of hydriodic acid and ferrous iodide, by individual treatment of iodine in drinking water, and by treatment of public supplies with iodine. The latter has not been in operation sufficiently long to determine its efficacy. The most favored treatment at present is administration of chocolate tablet containing 10 milligrams of iodine in form of an organic acid.—Robert Oleson, *Pub. Health Rep.*, 39:45, (Jan. 11) 1924. A. W. B.

✤

Studies Under Way on Filter Efficiency Limitations.—The U. S. Public Health Service has under way a detailed study of filter plants to determine extent to which a supply may be polluted and still be made safe by subsequent purification. Sixteen plants are included in test group.—*Eng. News-Rec.*, 92: 146, (Jan. 24) 1924. A. W. B.

✤

Creamery Waste Purification by Means of Activated Sludge.—Carbohydrate lactose contained in creamery wastes rapidly undergoes acid fermentation, thereby interfering with the successful operation of septic or Imhoff tanks. Four hours aeration of 2 or even 3 per cent skim milk with activated sludge was found to be sufficient to yield effluents which would probably not be objectionable for admixture with municipal sewage in septic tanks.—Dr. Max Levine, *Eng. News-Rec.*, 92:152, (Jan. 24) 1924. A. W. B.

✤

Iodine Water Treatment at Saulte Ste. Marie.—As a preventive of goiter the city has adopted the plan of introducing sodium iodide into city water supply at the rate of 2 lbs. a day for two weeks, twice a year.—Henry A. Sherman, *Eng. News-Rec.*, 92:155, (Jan. 24) 1924. A. W. B.

✤

Milwaukee's Sewage Disposal Plant.—Sewage is brought to the disposal plant, located on an island, from the mainland through two low-level and two high-level siphons, laid under the harbor 75 feet below water level. At the plant the sewage will pass through bar screens, grit chambers, fine screens and thence into activated sludge tanks, the effluent passing into the lake. Sludge not returned to the tanks will be pumped to a filter house, where it will be dewatered, dried, screened and conditioned for sale as fertilizer. Standard of purification from raw sewage is 90 per cent reduction of bacteria, 95 per cent reduction of suspended matter and stability of 72 hours. Detailed description of largest activated sludge plant yet designed.—T. Chalkley Hatton, *Pub. Works*, 55:17, (Jan.) 1924. A. W. B.

✤

Fertilizing Value of Activated Sludge.—It is estimated that in 1925 Milwaukee will have about 3,000 tons of sewage sludge per month. Experiments were carried on to produce a marketable product and a demand for it. Applying sludge in different quantities, by itself and in combination with phosphoric acid, potash and lime, to different plants and comparing its effect with other fertilizers, indicate the economic value of activated sludge to be greater than that of any other nitrogen-producing material.—T. Chalkey Hatton, *Pub. Works*, 55:23, (Jan.) 1924. A. W. B.

✤

Birmingham Waste Utilization.—Birmingham, England, is disposing of organic wastes by "Iwel dry process system," consisting of nine melters and dryers, steam jacketed cylindrical vessels, in which material under treatment is broken up and forced in thin layers against the hot plates by means of beaters. As steam does not come in contact with material available protein is conserved and natural properties of fat are retained. Abattoir, market and trade refuse, over 3000 tons per year, are treated at this

plant. All tin cans collected are treated at a detinning plant, being immersed in an electrolytic bath of sodium hydroxide and tin chloride for 30 minutes. Tin of 77 per cent purity is deposited on cathode.—*Pub. Works*, 55:29, (Jan.) 1924. A. W. B.

✤

Hygienic Aspects of Use of Sewage Sludge as Fertilizer.—Antagonism between various types of bacteria, resulting in their destruction in sludge digestion tanks reduces sludge that might be used for fertilizer purposes without detriment to public health, according to recent laboratory data. Foreign and American regulations for application of sewage sludge have been based on reports on dissemination of typhoid, paratyphoid and dysentery, by sludge, before knowledge of food handlers as typhoid carriers. Regulations governing disposal of wet sludge to farmers for fertilizing purposes at Baltimore sewage treatment plant.—Abel Wolman, *Eng. News-Rec.*, 92:198, (Jan. 31) 1924. A. W. B.

✤

Double Filtration of Water in Europe.—Prefilters, similar to mechanical filters, without use of coagulant except for color removal, are generally used as roughing filters to precede slow sand filtration in European practice.—George W. Fuller, *Eng. News-Rec.*, 92:205, (Jan. 31) 1924. A. W. B.

✤

Eductors for Washing the Rapid Filters at Zelienople.—In filter installation an eductor was installed instead of usual reducing valve on high pressure lines or high tower wash-water tanks. By this method filters are washed with water two portions of which come from clear well and one from high pressure tank. Increase in throat size of eductors increased output on 3 to 1 basis of high pressure to suction quantity.—Leo. Hudson, *Eng. News-Rec.*, 92:107, (Jan. 17) 1924. A. W. B.

✤

November Typhoid Epidemic in Part of Chicago.—A heavy rainfall on Oct. 17 and 18 caused heavily polluted Calumet River to flow into Lake Michigan, and, aided by high winds, is thought to have caused the November typhoid fever epidemic at Chicago. Chlorine application at 0.3 p.p.m. was sufficient to kill all but the stronger typhoid bacilli and these attacked the least resistant of the water consumers. With no chlorine treatment hundreds of cases would probably have developed, and with a slightly higher dose of chlorine Chicago would have continued to maintain its low record of about one typhoid case a day.—*Eng. News-Rec.*, 92:116, (Jan. 17) 1924. A. W. B.

✤

Operating Results of Baltimore Sewage Works, 1919-22.—Graphical presentation of average daily flow, range and frequency of chemical and bacteriological operating data—C. E. Keefer, *Eng. News-Rec.*, 92:6, (Feb. 7) 1924. A. W. B.

✤

Rapid Sand Filtration at Cambridge, Mass.—The first municipal water filtration plant of rapid sand type constructed in Massachusetts was dedicated June 28, 1923. The water is colored due to decaying vegetable growths in swamp areas on the watershed. The plant of 14 million gallons capacity, with provisions for future enlargement, consists of covered coagulating basin, 10 rapid sand filter units, filtered-water aerator, clear-water basin, sterilizing equipment, wash-water receiving basin, low-lift pump equipment and superstructures. Wash-water discharged from filters is returned to sedimentation basin. Description and discussion of design and operation.—George A. Johnson, *J. N. E. W. W. A.*, 37:339, (Dec.) 1923. A. W. B.

✤

The Care of Large Watersheds.—Forestation, sanitary precautions in regard to location of slaughter-houses, buildings, cesspools and privies, cutting of ice, inspection of impounding dams, aqueducts, culverts, etc., are discussed.—Frederick I. Winslow, *J. N. E. W. W. A.*, 37:385, (Dec.) 1923. A. W. B.

✤

Public Health Helps for Municipal Officials.—Part I.—The writer advocates the adoption of a standard for public health administration, and discusses certain standards and their application for improvement of municipal health service. Three principles for efficient expenditure for health service. First, that regardless of amount of money available, it should be budgeted for various activities so that amount available for each shall be in direct proportion to health productiveness measured in terms of disease prevention. Second, disease prevention should

be based upon scientific principles established by modern health research, instead of health tradition of previous generation. Third, budget should be sufficient to put such a rational program into effect and carry it out to a logical conclusion. Prevention of communicable disease and child hygiene are discussed.—Dr. Carl E. McCombs, *Am. City*, 30:127, (Feb.) 1924. A. W. B.

✤

Typhoid Fever Death-Rate Lower Than Ever.—Figures from Department of Commerce for typhoid fever in registration area of United States indicates death rate of 7.5 per 100,000 in 1922. The rate was 35.9 per 100,000 in 1900.—*Am. City*, 30:136, (Feb.) 1924. A. W. B.

✤

Modern Carthage Builds a Forest.—Encountering trouble by erosion of its watershed, Carthage, N. Y., decided in 1913 upon an extensive program of reforestation of its 2000-acre watershed and placed 20,000 four-year-old transplants at a cost less than $8 per acre. Trees have been planted each spring until more than 600,000 trees have been set. Fields which a few years ago furnished scarcely enough grass to pay for cutting are producing an annual crop of 2,500 pounds of wood. Under careful management a forest may be established yielding a million board feet of lumber a year, without detracting from its value as a watershed.—G. H. Collingwood, *Am. City*, 30:147, (Feb.) 1924. A. W. B.

✤

Garbage Collection and Disposal in Bluefield, W. Va.—Householders are required to provide sanitary covered metal containers for their garbage which must be wrapped in paper before being placed in the container. Collections by trucks are made twice a week. Disposal is by incineration, at an operating expense of $3.33 per ton of waste consumed.—*Am. City*, 30:172, (Feb.) 1924. A. W. B.

✤

The Medical Officer of Health as a Prophet.—This article discusses various means of using existing mortality rates to prophesy the rates for future years. To determine the exactness of the predictions several methods were employed; first, by use of Pritchett's formula, viz., parabolic curves of low order, using the rate of mortality of women aged 35-45, chosen because (a) this rate has not declined very far, (b) it is for a period of life wherein mortality is not subject to violent annual fluctuations. This rate was constant at about 12 per 1,000 from the beginning of registration to 1866-70; since then it has fallen to 5.4 in 1920. Plotting rates between 1872-1900 to a parabola of second order and extrapolating for the next twenty-one years gives a result that is never (excepting the destructions of influenza) more than 12 per cent wrong and nine times less than 5 per cent wrong. Using the same formula, but plotting the logarithms of the death rate or logarithms of death rate minus a constant, did not extrapolate nearly so well as the simple parabola. A cubical parabola fitted by Tchebycheff's process of successive approximation gave but slight improvement.

Comparison of the straight line and curve for death rates at various ages shows the straight line to be a better extrapolator for ages 0-5, 5-10, 35-45. In the last decades of life, for both sexes, cubic extrapolates are better than straight line extrapolates and are very close to the truth.

Discussion of epidemics of preventable diseases shows much to be done by the health officer. In the Bolton-upon-Dearne Village, in 1921, with 3,581 population there were 260 cases of typhoid fever and 29 deaths. At Terling with 900 inhabitants, within two months, 300 persons were attacked with typhoid fever and 41 died, a preventable disease killing in a short time a larger proportion of the population than all causes of death put together ought to have killed in two years.

In 1851-60 the death rate from all causes of males aged 55-65 was 30.9 per 1,000, in the whole country, in 1901-10 it was 31.8. The rate in 1851-60 was the lowest of the whole six decennia. This change for the worse is correlated with industrialization. The experiments resulting from the industrial slump at Sheffield leave no doubt as to the lethal influence of smoke polluted air, giving another heading with considerable room for improvement.

The writer prophesies that when the medical officer of health is a psychologist, as well as a bacteriologist, a legal expert, a eugenist, a statistician, and all the other things he now is, we shall see a further decrement of mortality at the most unpromising period of life.—Maj. Greenwood, *Pub. Health (London)*, 36:213, (May) 1923. A. W. B.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES

DRS. E. R. HAYHURST and N. C. DYSART

First Report on **Compensation for Silicosis.**—This 71 Page bulletin under date of 1924 gives a very complete discussion by the Departmental Committee on Workmen's Compensation for Silicosis with appendices including the Silicosis Act of 1918 and the Scheme by which it is administered and a statement of the compensation fund for the four years 1919-1922. One appendix also gives a short account of provisions for dealing with the similar condition in South Africa. Four stages of silicosis are now recognized, (1) latent period when the man is free from symptoms and (usually) objective signs because the fine silica dust deposited in the lung tissue as yet has given rise to little or no irritative reaction, (2) formation of fibrous tissue revealed by the radiograph or by changes in the breath sounds, (3) more or less incapacitation shown by shortness of breath, easy exhaustion, cough, and "colds" hang on longer—this is the period of pure silicosis, and (4) infection of the lungs by the tubercle bacillus which usually occurs sooner or later. This susceptibility to tubercular infection appears to exist even when the silicosis is in the first or latent stage, and latent silicosis appears to be unmasked by tubercular infection after which the evolution of the silicosis is hastened. The value of the radiograph as a basis for diagnosis has been established.

So far the Refractories Industries have been covered in Great Britain, the main seat of which lies in Yorkshire, and constitutes a specific trade group engaged in getting and manipulating ganister and other highly siliceous material used for silica bricks, pugs and furnace linings. Normally the industry employs 3,500-4,000 persons, but at the present time only about 2,300.

The Scheme has now been in operation for nearly five years and covers mines, quarries, factories and workshops at which refractory material containing not less than 80 per cent of silica (SiO_2), is manipulated except mines or quarries where such material is only occasionally worked. Up to the end of 1922 the Fund had amounted to £54,760, the total expenditure being £31,760. Upwards of £18,200 has been expended in compensation upon 170 claims. At the end of that year there were 114 cases of workmen in receipt of weekly payments under the Scheme. The Scheme appears to have worked smoothly. There have been no complaints received in regard to the conduct of medical examinations nor of the system of Joint Committees which administers it. There is, however, a lack of uniformity in medical examinations, a failure to eliminate workmen showing signs of the disease, before they become disabled, and, because of inadvertently decreasing the revenue from the original 5 per cent levy to 2 per cent, a difficult financial position which, upon raising the levy, would now appear to be solvable. Two borderline industries appear to need further inquiry before including them in the Scheme. These are the refractory departments of steel works, in which exposures appear to be intermittent, and workers in natural sand quarries among whom there appears to be no evidence of the occurrence of silicosis, probably due to the percentage of moisture present and the fact that dust in sand pits is less than one-tenth of that contained in stone quarries. It is found that materials which do not contain 80 per cent silica are usually unsuitable for and cannot compete with the regular refractories materials.

The Bulletin discusses in detail medical arrangements, use of radiograms, provisions as to compensation, tuberculosis unaccompanied by silicosis, duties of employers and workmen and the value of this Scheme in providing a satisfactory system for the basis upon which to frame schemes for other and larger industries.—*H. M. Stationery Office,* Imperial House, Kingsway, London, W. C. 2, (price 2s.).

Workmen's compensation in 1922 (Great Britain).—Remarkable figures as to miners' nystagmus are found in the Home Office Statistics for the year 1922, just issued. This affliction amounts to 68 per cent of the total number under the Compensation Act. In the first year (1908) there were 386 cases re-

corded. In 1911 there were 1,000 new cases, and in 1913 the 2,000 mark was passed. In 1922, 4,092 cases were recorded. Other points of general interest in the report show the increasing recourse to the services of medical referees. Here a court judge can summon a medical referee to sit with him as assessor. This was done in 465 cases in 1922. In addition recourse is had to medical referees for certificates of fitness or incapacity for work. This was done in 1,224 cases in 1922. The Act also permits an appeal to medical referees from the decision of certifying or other surgeons. There were 1,049 such appeals in 1922, and it is worth noting that in as many as 387 of these the previous surgeon's decision seems to have been overruled. Two other points of interest are the decrease of litigation under the Acts and the slight increase in payment of compensation as compared with cost of insurance. There is agitation for handing over to the State all such insurance on account of the low cost of administration. The insurance companies are, however, gradually reducing the cost, so that whereas in 1921 the proportion of income allocated to payment of compensation by the companies was 35.95 per cent, in 1922 it was 44.44. The big accident insurance companies have entered into a self-denying arrangement with the Home Office by which the figure will not be less than 60 per cent and perhaps better in the future.—*Lancet* (Editorial), No. 5238, 144, (Jan. 19) 1924.

Offensive Odors.—This special report concerns intensive investigations of offensive odors made under the direction of the writer in connection with industries of Providence, R. I., and neighboring suburbs. The chief sources of odors are those from crude petroleum from the Texas Company and Standard Oil Company plants, and certain oil burning plants to which other industrial and domestic odors are added. They are variously described as like rotten eggs, sweetish burnt rubber, burning garbage, burning sugar, scorching paper, etc. At times they are irritating to the eyes, nose and throat and at other times merely disagreeable to the smell. Sulphur and nitrogen compounds are the chief disagreeable odors. The investigation developed a method for recording odor intensities by which it was enabled to associate the source of the odor with the degree of nuisance. One company standing at the head of the list rated 2.0 as against a slaughter house, standing next to the bottom of the list, with a rating of 1.8. The conditions affecting odor-travel were studied—wind velocity between 5 and 15 miles per hour was present when two-thirds of the odors were recorded. In one instance an odor was traced from hilltop to hilltop for some distance when it was unable to be detected in the valleys between. In other cases an odor was observed to settle in air pockets in valleys, etc. The questions of the injury of property by odor, of nuisances, and the effects of odors on health are quite thoroughly discussed. Volatile constituents of crude petroleum may produce symptoms affecting the central nervous system; they have, moreover, a markedly irritating effect on the mucous membrane of the respiratory organs. Acute and chronic symptoms are noticeable from these constituents. The various odors from this source consisted of benzine, sulphur compound (H_2S, CS_2, SO_2 and SO_3), asphalt vapors, pyridine, and carbon monoxide. Records of 96 different persons who were more or less seriously affected by these odors were compiled. The most common symptoms were irritation of the throat, suffocation or choking sensation, nausea, headache, dizziness, gastric trouble, and malaise. It is noted also that psychological as well as physiological effects detrimental to health were found. Rhode Island physicians considered that a number of diseases were also unfavorably affected.—Stephen DeM. Gage, Chemist and Sanitary Engineer, *Rhode Island State Bd. of Health* (1923).

✤

The Dusted Lung with Special Reference to the Inhalation of Silica Dust (SiO_2) and its Relation to Pulmonary Tuberculosis.—Summary: 1. Most inhaled dust is expelled from the air passages; but some minute particles pass into the alveoli and are carried thence into the lung tissue.

2. Dust particles in the lung tissue undergo a pleural drift; where they come to rest they cause inflammatory changes which result in the formation of pseudo-tubercles, the beginning of fibrosis.

3. All dusts are not equally harmful, *e.g.*

coal is possibly beneficial, lime is neutral, but silica is particularly injurious.

4. Silica, owing to the formation of pulmonary fibrosis, causes a train of symptoms which can be distinguished clinically from those of pulmonary tuberculosis. For this purpose radiography is of great use.

5. The evidence of the injurious character of silica dust is drawn chiefly from industrial mortality statistics in which all forms of phthisis are taken together. Statistical evidence from all parts of the world agree on this point; and there is no evidence that any other factor beyond the inhalation of silica is the responsible agent.

6. Careful consideration of the disease entity, pulmonary silicosis, of its slow development and clinical manifestations, and of its non-infective character, points to the conclusion that more persons than it is generally thought die without becoming tuberculous.

7. Consideration, in addition, of the reaction of living tissue to colloidal silica leads to the theory being put forward—namely, that when tuberculosis is manifested, the infection is not necessarily new, but may have occurred when the dust particles were orginally inhaled and have remained latent within the necrotic center of the pseudo-tubercles until a breakdown of the surrounding scar tissue releases a massive infection upon tissues of low vitality.

8. The low infectivity of cases of pulmonary fibrosis is probably due (a) to the fact that many cases are never tuberculous at all, and (b) to the rapid termination of open infective cases, leaving but a short period for infecting contacts.

9. The terminology appearing to-day on death certificates is faulty; the cases should be described as (a) pulmonary fibrosis, and (b) tuberculosis (if present). The term "phthisis" is unsatisfactory and should be expunged.—Nicholson, Balfour S., *Jour. of Ind. Hygiene*, V, 6, 220, (Oct.) 1923.

✤

Occupational Diseases in Ohio.—The Division of Claims, Industrial Commission of Ohio, has an accumulated experience of occupational disease claims against the State Insurance Fund effective from the date of the Occupational Disease Act (August 4, 1921) to December 31, 1923 as follows: Anthrax 1, lead poisoning 260, mercury 1, arsenic 3, benzol 24, gasoline and similar petroleum products 5, infection or inflammation of the skin on contact surfaces due to oils, cutting compounds or lubricants, dust, liquids, fumes, gases or vapors, 841, carbon dioxide 1, brass 14, and unclassified (not coming under the Act) 61,—total 1,221. To this should be added the total of 326 claims (not classified as to cause) which were reported by certain larger companies which self-insure, making a grand total of 1,547 claims. The chief of the Division of Claims estimates that not over 7 per cent of these have been disallowed or in other words that over 93 per cent have been granted compensation and medical fees according to the provisions of the Act.

During the calendar year 1923 there were reported to the Ohio State Department of Health the following occupational diseases (most of which were also reported to the Industrial Commission as above): Lead poisoning 82, arsenic 7, benzol 2, infection or inflammation of the skin, etc. (all being rubber dermatitis), 597, brass 2, carbon monoxide 3, turpentine 2, cyanide of potassium 1, anilin 1. The following diseases, also compensable by the Industrial Commission, reported no cases over the duration of the Act (approximately 2 years and 5 months): glanders, phosphorus, carbon bisulphide, wood alcohol, and compressed-air illness. The total number of fatal cases of occupational disease out of the 1,547 claims numbered 30.—*Official divisional reports* (unpublished). Hayhurst.

✤

Decisions under the Workmen's Compensation Law of Ohio in Respect to Occupational Diseases.—This Bulletin of 212 pages includes the Workmen's Compensation Law with amendments and annotations, all laws defining the duties and powers of the Department of Industrial Relations and the Industrial Commission of Ohio with amendments and annotations, and rules and regulations governing the application of the Workmen's Compensation Law. Many important decisions bearing directly upon the occupational disease compensation act and indirectly through its relation with the law compensating injuries are given in this Bulletin (see especially pp. 76-78).—*Industrial Commission of Ohio*, Columbus, Jan. 1, 1924.

Arguments and Recommendations Respecting Spray Painting before the Wisconsin Industrial Commission.—With the aid of the Workers' Health Bureau (799 Broadway, New York City) the Brotherhood of Painters, Decorators and Paperhangers of America, presented a brief before the Advisory Committee on Paint Spraying of the Industrial Commission of Wisconsin during December, 1923, which discussed the subject of paint composition used in spraying machines, room-booth installations for protection of operators, medical examination of operators and helpers, exterior painting—wind advantage, interior painting—natural ventilation, pressures allowable in spraying machines, contamination of adjacent areas, exclusion of others, nose and mouth protection including the mooted question of respirators, hand and body protection, spraying of small objects, ship painting, labeling of paint materials to show poisonous content and the hand-mixing of lead paints. Affidavits were presented from a number of specialists skilled in the field of industrial health—Dr. Alice Hamilton emphasized the increase of the danger of poisoning through the use of the spraying apparatus from the escape of volatile substances such as quick-dryers, particularly petroleum ether, turpentine, and benzol. The symptoms of these are given in brief and she concludes with the statement, "It is my opinion that the only way to protect a painter from these fumes would be to furnish him a mask with a supply of pure air and I should suppose that work under these conditions would be greatly hampered, if not rendered impossible." Dr. J. W. Schereschewsky stated that where the paint itself or the solvent used is poisonous the workman should be protected against the spray. Where practicable the best method is to place the object under a hood with proper air-exhaust. Fumes are especially poisonous in inclosed spaces. Here a smoke helmet which permits pure air to be supplied to a workman through a pipe should be used. The respirator avails little against vapor. Dr. E. R. Hayhurst stated that pressure or gravity equipment has the same hazards as atomizers, though in lesser degree. Medical examination once each six months would be little better than no efforts in this direction at all as the poisons involved usually act immediately. The literature on industrial toxicology is replete with chronic, sub-acute, acute, and fatal cases of poisoning from the pigments, vehicles and quick-dryers commonly used in paints which are adaptable to the spray method of application. Respirators in which the particles may be caught upon a sponge or gauze through which the worker must also obtain his air for breathing are highly dangerous since the particles continue to vaporize within the respirator. The only known safe method of protecting an operator from breathing dangerous volatilizing poisonous substances, whether in the form of gas or particles, is to separate the breathing atmosphere from that containing the poisonous elements which cannot be done by a respirator. The threshold of toxicity of most of the poisons used in painting is well established for each poison and breathing amounts in excess of this physiological threshold (as is common in painting, particularly with spraying machines), results in poisoning. The writer fully indorses the labor saving aspects of the spray painting device and concludes as follows: "It is my concluding opinion that until equipment has been perfected and accepted as practicable which will prevent the worker from breathing the toxic products used in or as the result of his operation, any apparatus or device which extends the possibilities of poisoning should be prohibited."—*The Painter and Decorator*, XXXVIII, 1, 16-30, (Jan.) 1924. (Published at Lafayette, Ind.)

✤

Hydrogen-sulphide Literature.—This is an excellent syllabus on hydrogen sulphide poisoning and begins with an article by Rouelle, 1773. No one man may be credited with an epoch-making discovery. We now know that hydrogen sulphide is one of the most toxic gases. It is comparable to hydrogen cyanide in the rapidity of its action and the concentration from which death will result: 0.005 concentration will cause poisoning. This low percentage is often found in certain industries. The exact mechanism of this poison is still unknown.—C. W. Mitchell and S. J. Davenport, *Public Health Reports*, 39, 1, 1-13, (Jan. 4) 1924.

CHILD HYGIENE

TALIAFERRO CLARK, M.D.

Publication of the International Record of Child Welfare Work Discontinued.—The International Association for the Promotion of Child Welfare is compelled, owing to various circumstances, to discontinue for the time being the publication of the "International Record of Child Welfare Work."

The "Œuvre Nationale de l'Enfance de Belgique" (the Belgian National Child Welfare Work) has consented to take over the publication of the French edition, the "Bulletin International de la Protection de l'Enfance." Our members who have sent in their subscriptions for this edition will continue to receive it regularly as usual and will find that no alteration has been made in its form. The number of subscribers to the English edition has not proved sufficient to justify the outlay involved by the publication of the "International Record of Child Welfare Work." The Association trusts that the members of the International Association for the Promotion of Child Welfare who have been accustomed to receive the documents in English, as well as subscribers to the "International Record," will not object to the French edition being henceforth sent them. Otherwise, they are requested to notify the Editor of the "Bulletin Internationa," 2 Avenue Galilee, Brussels.—*Bulletin International de la Protection de l'Enfance*, (Jan.) 1924.

✤

A Study of Whooping Cough.—A total of 300 cases of whooping cough were studied by the authors in a hospital under uniform and controlled conditions. The conclusions based on this study are in part as follows:

Eighty per cent of all cases of whooping cough occur in children under 5 years of age. The causative agent is regularly present in the catarrhal stage of the disease. Whooping cough is most communicable in the catarrhal stage, when its true nature is not recognized. It is usually not communicable after the fourth week.

The duration of the disease is from 5 to 12 weeks in 70 per cent of the cases; in 80 per cent the whoop lasted from 1 to 4 weeks; and in 86 per cent the vomiting lasted from 1 to 4 weeks.

The respiratory complications are present in 58 per cent of the series; fourteen per cent had a complicating bronchopneumonia.

The outcome of an attack depends on the age of the child and on the presence or absence of pulmonary complications.

Eighty per centy of all deaths from whooping cough occur in children under 2 years of age.

In a series of 297 cases, 90 per cent of the deaths were due to a complicating pneumonia. The mortality in those patients who had pneumonia was 18 per cent and in those who had measles it was 30 per cent. The cough is not the only or most important symptom of the disease. The nervous system and the nutrition are also affected.

Patients with whooping cough should be kept in bed. If possible the bed should be placed in the open air.

Antipyrin with the bromides as adjuvants gave the best results in the control of the spasmodic cough. No favorable results were obtained from injections of ether, or from vaccination.

Whooping cough vaccine has a specific effect in about one-fourth of the cases. In those cases which fail to respond to treatment the vaccine may be given too late or they may not be true whooping cough.—Charles Herrman and Thomas Bell, *Archives of Pediatrics*, (Jan.) 1924. ✤

The Palliative Treatment of Toothache.—The fact that from 50 to 70 per cent of school children are found on examination to have more or less serious dental defect is evidence not only of an undue neglect of dental attention but also, in an unfortunate number of instances, of the lack of dental facilities. In communities where dentists are few or lacking the doctor is often called upon to treat toothache though not always successful in giving relief. For this reason the successful experience of others may be helpful. The author rightly concludes that the successful relief of pain requires a knowledge of the pathology of dental disease. Toothache ordinarily is due to two prime causes: (1) inflammation of the pulp (commonly called the nerve), and (2) inflammation of the dental periosteum.

The pulp is an extremely delicate structure composed largely of nerve fibers and blood vessels which enter the root by a narrow opening. "The cavity in which the pulp lies, being formed of dentine, is rigid." In hyperaemia of the pulp the blood vessels dilate at the expense of the other elements, which serves to explain the severe pain and the reason why suppuration and gangrene so commonly occur. The pain is sharp and shooting, paroxysmal in character and may suddenly cease. Thermal changes affect the pain. In the early stages cold will relieve it by constricting the blood vessels, but later both heat and cold intensify it.

The treatment consists in the application of pure carbolic acid or oil of cloves. A convenient preparation of carbolic acid consists of pure carbolic acid, 4 parts; resin, 4 parts; and chloroform, 3 parts. The mixture forms a viscid fluid. The cavity, if accessible, should be gently cleaned out with an excavator, dried and a small pledget of absorbent cotton impregnated with the mixture placed therein. This should be protected from the saliva by a water-tight dressing. The use of gutta-percha is not advisable but a convenient dressing is absorbent cotton dipped in gum-mastic. It sets hard enough to last several days. In addition the gums should be painted with tincture of iodine to aid in depleting the vessels.

The periodontal membrane is attached to the root and the bone of the socket, and is a supporting and nutritive structure. Infection may take place from the margin, as in pyorrhea. These cases rarely give rise to pain because the progressive ulceration from the surface allows free drainage and prevents tension. However, when infection takes place by way of the pulp canal following gangrene of the pulp, pain is quite common. The engorgement of the vessels causes the tooth to rise slightly in the socket accompanied by a slight persistent soreness which is increased when the teeth meet. At this stage gradual pressure on the tooth may bring relief by emptying the vessels, though a sudden impact is painful. As the inflammation increases the tissues become filled with exudate, the tooth rises higher in its socket and becomes perceptibly loose. The pain assumes a dull, boring character, and the slightest pressure increases it. Thermal changes do not affect it. When suppurating occurs the pain assumes a persistent throbbing nature until the pus makes its way through the periosteum of the bone. In the treatment of periodontitis it is useless and even may be harmful to place a dressing in the cavity of the tooth. The only possible treatment is counter-irritation applied to the gum, best secured by the use of tincture of iodine to which some aconite has been added. The gum should be dried and the excess of iodine squeezed out of the applicator before applying. Penetration is increased if a current of warm air is directed on the gum. If there has been laceration of gum or splintering of the bone in extraction the after-pain may be severe. This is best relieved by irrigation of the socket with a solution of carbolic acid (1 to 100) as hot as can be borne by the patient. The socket should be gently flushed out several times and the solution used frequently as a mouth wash. If the pain is very acute, it is often due to the end of the pulp projecting from the end of a broken root. Relief is obtained by drying the socket and swabbing it out with pure carbolic acid.

"It must be emphasized that the palliation of toothache cannot always be promised by measures short of those available to the dentist. But an attempt to relieve pain is always worth making and if a correct diagnosis is made the attempt will often be successful."—A. T. Pitts, *The Lancet*, (Jan. 5) 1924.

✦

The Control of Bleeding from the Nose.—Nasal hemorrhage is usually controlled without great effort if the bleeding is not marked. On the other hand a steady consistent ooze persists in some cases in spite of the use of all available remedies.

In the majority of cases, bleeding is confined to a comparatively limited area on the anterior portion of the nasal septum, known as Kiesselbach's area. Here, because of their superficial location immediately overlying dense cartilaginous structure, the arteries are liable to injury and cannot retract into deeper tissues after rupture.

The bleeding must be controlled by suitable packing which should make an even and firm pressure against the bleeding site, and not become saturated with blood to render the site infective and the packing soggy.

This can be accomplished by the use of an ordinary finger-cot about the size of the index finger or smaller. The cot is inserted into the bleeding nasal cavity by the use of nasal forceps as far as it will go with the open end just protruding from the nasal orifice. A one-half inch strip of plain gauze is then packed into the cot as firmly as possible with the nasal forceps while it is held to prevent it from sliding in. The insertion of the finger-cot is facilitated by covering the outside with a bland lubricating jelly.

By this procedure the gauze packing remains dry and the elasticity of the distended finger-cot distributes the force of the pressure evenly in all directions. It is not necessary to remove this packing within twenty-four hours. In removing the figer-cot the gauze is first removed and then the finger-cot slides out very easily.—Joseph G. Levine, *Jour. Amer. Med. Assn.*, (Jan. 19) 1924.

✤

Serving Milk in the Schools.—Answers from the questionnaires sent out by the Committee on Serving Milk in the Schools, International Association of Dairy and Milk Inspectors, indicate that school boards in general are favorable to this service though a few are indifferent. With regard to the attitude of the school teachers, some of them are enthusiastic, others favorable, while still others feel that they are loaded with enough work. In the opinion of the committee, as a general rule, milk service in the schools is much more effective when the school teachers are favorable or enthusiastic about it.

Many of the schools serve milk only to children who are undernourished or underweight. The school boards or departments of education of Chicago, Detroit, Buffalo, Richmond, Va., and Schenectady have authority to use funds from school appropriations under proper budgets for undernourished or deficient children. Richmond, Virginia, furnishes milk to all open-air rooms; Detroit for the undernourished children; and in Chicago the Municipal Tuberculosis Sanatorium supplies about 4,800 gallons of milk monthly for the use of undernourished children in open-air rooms.

On the other hand in a large number of cities' funds for this work are obtained wholly from unofficial sources, such as Women's Clubs, Visiting Nurses Associations, The Elks, Kiwanis Club, Mothers Clubs, the Red Cross, Parent-Teacher Association, and City Chest Funds.

Another class of milk service, at both mid-morning and other lunches, provides for the purchase of milk by the children. The price varies in different localities from 3 cents per one-half pint to 5 cents per one-half pint. In many places crackers are served with the milk. In some instances one extra cent is charged to furnish milk to children who are not able to pay for it.

A few cities reported milk served from cups, but used sanitary cups for the purpose of reducing the cost and to make it possible for more children to get milk. Boston reported the cost in cups from 2 to 3 cents per cup, varying with the size of the cup.

The health authorities in Worcester, Mass., require the use of certified milk. Several cities reported control of the milk and special inspection.

With but one or two exceptions the reports indicate that the service of milk in the schools benefited the children's physical condition as shown by increase in weight, greater activity and otherwise. The reports also indicate that with the increased weight and vitality the children did better school work, and one report indicated that there was better self-control.—W. P. B. Lockwood, *Twelfth Annual Report of the International Association of Dairy and Milk Inspectors*, 1923.

✤

Antirachitic Effect of Cod Liver Oil During the Period of Pregnancy or Lactation.—In view of the fact that cod liver oil has been found to be a specific in the prevention and cure of rickets both in animals and man, experiments were undertaken (1) to ascertain whether, when cod liver oil is fed to pregnant animals, its active principle passes through the placenta and is imparted to the fetus, and (2) to ascertain whether the specific factor is secreted into the milk in quantity sufficient to protect the young.

The test consisted in the administration of cod liver oil of known purity in connection with standard dietary to pregnant rats during the latter half of the pregnancy; to lactating mothers for seventeen days, or more than half the lactating period; to the mother throughout lactation; and by feeding cod liver oil directly to the young during the latter half of the suckling period.

The result of these experiments indicate

that cod liver oil administered to the mother during pregnancy cannot be relied on to protect the offspring from rickets; that the active principle of the oil is not excreted in the milk in adequate amounts—rats receiving even large doses of cod liver oil were unable to afford protection to their young, which were subsequently placed on rickets-producing diets; that cod liver oil did confer subsequent protection when fed to the young during the latter half of the lactating period directly and not through the medium of the mother's milk, demonstrating the essential difference between direct and indirect nutrition; that this protective power suggests that the specific factor in the oil can be stored by the young and drawn on in time of need. "Although it cannot be taken for granted that these results are applicable to human rickets, it is probable that such distinction as exists is one of degree rather than of kind."

The author is careful to explain that these experiments are not to be interpreted as indicating that the subsequent development of rickets in the young is not influenced by the diet of the mother during the period of pregnancy or lactation, because recent experiments in his laboratory show that such was not the case.—Alfred F. Hess and Mildred Weinstock, *Amer. Jour. of Diseases of Children*, (Jan.) 1924.

✦

The Welfare of the Expectant Mother.—Because of the very large proportion of child births attended by midwives in the city of Birmingham, England, the health department called the midwives of the city in conference with a view of securing their coöperation in ante-natal work. They were asked to keep ante-natal registers which were supplied them. In order to encourage examination of the urine, a cheap testing outfit was made available at cost with the suggestion that, where she did not care to make the examination herself, she should advise attendance at pre-natal clinics or at the child welfare centers. The midwives were also asked to send the patients to the family doctor, or where there were financial difficulties, to the ante-natal clinic when it was felt that medical advice was required. There are at present 177 midwives in active practice in the city of Birmingham of whom 148 are now keeping ante-natal registers; 43 regularly testing the urine; and 16 are sending cases to the ante-natal clinics. Maternity outfits were made available at the price of 6s. 2d., and 46 have been purchased by the midwives.

The number of births in families visited by the child welfare center during the year was 16,037 and the number of women attending the pre-natal clinics 6,169, or an attendance of 38 per cent of the births. The greater proportion of these were midwife cases.

In addition the public health committee proposes to issue certificates of competence to those midwives who carry out the midwifery duties in a satisfactory manner and who, at the same time, take adequate ante-natal care of the mothers who engage them. Consideration will be given to the following facts as a basis of the certification.

1. That the midwife has interviewed each patient, either at the patient's home, or at that of the midwife, and kept a record of ante-natal conditions in a register to be provided.

2. That at least one test of the urine is made in every case. (For this purpose a cheap testing outfit can be purchased at cost price from the Midwives' Inspectors. Specimens of urin may be sent to the nearest ante-natal center for examination if preferred.)

3. That whenever any ante-natal condition is found which will be prejudicial to the health of mother or child, the case is sent to the patient's private medical practitioner. (In the case of women who have no doctor, or are too poor, the midwife should send the mother to one of the ante-natal clinics at the Maternity and Child Welfare centers. Better still, the midwife should accompany the patient to the doctor or center.) Cards to be used for this purpose are supplied herewith.—John Robertson, *The Medical Officer*, (Nov. 3) 1923.

✦

The Causation and Prevention of Foetal Death.—Based on intensive examination of placental and foetal remains procured through the active coöperation of the members of the staffs of several general and lying-in hospitals and poor-law infirmaries, and also investigation of the mothers, it was found that syphilis was the primary cause of death in 16 per cent of the 300 foetuses studied. There were also 14 cases of "possible" syphilis, or cases where the mothers had a positive

Wassermann reaction but where there was no supporting evidence in the foetus or placenta.

The extreme frequency of cranial injuries was another important discovery. Of 167 foetuses dying during labor, no less than 48 per cent had tearing of the dura mater and cerebral hemorrhage. "The almost constant discovery of these injuries in foetuses born dead after breech-delivery, is a fact of great practical importance and indicates the urgent necessity of teaching a better method of managing the delivery of the after-coming head than the one at present in vogue.

Of highest importance, from the preventive point of view, is the observation that there were more deaths of foetuses during labor than there were during pregnancy. In other words, more foetuses were killed by the complications of labor than died during pregnancy from maternal or placental diseases. The percentages of deaths from the complications of labor, from maternal conditions, from foetal defects and from placental states, are as follows:

	Per cent
Complications of labor (including antepartum hemorrhage and postmaturity of the fetus)	51
Syphilis	16
Toxemias of pregnancy	10
Chronic renal and other maternal diseases	2
Placental states leading to relative placental insufficiency	6
Fetal deformities	5
Cause of death unknown	11

The relative frequency with which the several causes of death occur serve as the basis of an estimate of how many of them could have been prevented. As a preliminary to the consideration of prevention, it must be borne in mind "that there are two distinct periods when causes of foetal death act, when death of the foetus occurs, and when preventive treatment can be carried out: (1) During pregnancy, the ante-natal period; and (2) during labor, the intra-natal period." In other words, the period of strategy and the period of tactics (obstetrics). There appears to be a tendency to exhalt the strategy at the expense of the tactics. This is an unequal conception of midwifery practice but can be appreciated when one realizes that when treatment is indicated, as a result of ante-natal examination, such treatment usually consists in the application of intra-natal methods.

For the purpose of preventive treatment, bearing in mind the ante-natal and intra-natal periods, cases of foetal death can be considered in four groups:

1. "Those, the cause of which can be discovered during the ante-natal period and can be prevented by purely ante-natal treatment. The great representative of this group is syphilis. Another example is toxemia of pregnancy, many cases of which can be kept within reasonable bounds, or even cured, by simple ante-natal treatment. Still another example is breech presentation, which can be corrected by external version."

2. "Those, the causes of which can be discovered during the ante-natal period, but which depend for their prevention on intra-natal methods. The best example of this is contracted pelvis. If discovered early enough in pregnancy the obstetrical treatment can be planned, and will be either waiting for natural labor, with the help of forceps if necessary, or induction of premature labor, or Cæsarean section. Another example is afforded by those cases of toxemia of pregnancy which do not yield to ante-natal treatment and which must be treated by induction of premature labor. Another rare example is obstructive pelvic tumors."

3. "Those, the causes of which are not discoverable in the ante-natal period, but which make their presence known just before or coincidently with the onset of labor, or during the course of labor. Examples of this group which are prolific of foetal death are the ante-partum hemorrhages. Other common ones are prolapse of the umbilical cord and cases of prolonged labor from such causes as persistent occipito-posterior presentations. In this group most of the foetuses have cerebral hemorrhage and tearing of the septa of the dura mater, consequent on delivery by forceps or version."

4. "Those, of which the causes, so far as our present state of knowledge stands, are not discoverable or preventable by any means whatever. These include the great group in which the cause of foetal death cannot be determined, the cases of relative placental insufficiency due to abnormal smallness of the placenta or to the destruction of a large area of placenta by infarction, those cases in which a blood-clot is found behind the placenta, and cases of severe foetal deformity such as amencephaly, hydrocephalus, and oedematous states of the foetus."—Report on the Causation of Foetal Death, by Eardley Holland, *Report to the Brit. Ministry of Health*, 1922.

HEALTH EDUCATION AND PUBLICITY

E. G. ROUTZAHN

The Negative appeal.—"It is noteworthy that in the advertisements examined in this survey (a study of 717 advertisements) the negative appeal was used in only a small number of cases. In one third of the advertisements in which the buying motive was *maintaining and preserving health*, the negative appeal was used. It also appeared in three advertisements in which *cleanliness* was the buying motive and in four advertisements which urged consumers to obtain *security from danger*. The negative appeal was also used in a few scattered advertisements which illustrated other buying motives. The negative attack aims to arouse the instinct of fear. It may be effective temporarily, but fear is not normal in healthy persons; hence, the appeal to positive buying motives apparently in most instances has to be found more effective." This is quoted from a study of advertisements in current periodicals in a search for "buying motives" as interpreted by commercial advertisers.—"Consumers' Buying Motives"—Melvin T. Copeland, *Harvard Business Review*, 2:139-153, (Jan.) 1924.

✤

Publicity among your own people.—"Anyone who is acquainted with the inside of the hospital knows that most hospitals are behind other establishments in the organization of personnel. The employees of many hospitals never know anything about the institution other than what takes place in their particular department. This situation is serious, as far as hospital publicity is concerned, for it makes coördination between departments very difficult. Other establishments which employ a large number of people have for some time realized the advantage of having a house organ or similar publication. Lately a few hospitals have begun to publish monthly news sheets to promote coöperation among employees." This ninth of a series of articles on hospital publicity includes suggestions for other health agencies.—"Inside Publicity"—Ralph Welles Keeler, *Modern Hospital*, 22:124-127, (Feb.) 1924.

✤

The suitcase theatre.—School nurses and others who talk health in class rooms and before other small groups of children have frequently used commercial advertising posters and other unsatisfactory graphic material so they could have "something to show" to the youngsters. With the invention of the Suit Case Theatre by Stella Boothe, 310 East 18th Street, New York City, this is no longer necessary. "Safety First in the Suit Case Theatre" is a full page reproduction of two scenes from the recently dramatized safety lessons prepared for the National Safety Council.—*Child Health Magazine*, 5:64, (Feb.) 1924.

✤

More alluring titles.—Some headings from the February, 1924, issue of *The Northwestern Health Journal*, Commerce Building, St. Paul, Minn.:

The Making of the "Village Fool"—(The delinquent, the criminal, the "village fool" are often feebleminded, having the reasoning processes of a child and the physical powers of an adult.)

The Perils of the Safety Pin—(Baby is apt to swallow small things within its reach.)

A man Is As Great As His Brain—(Here are the facts you should know about the brain.)

"New" Mattresses from Old—(How old mattresses are reworked.)

✤

One appeal at a time.—"What I like about . . .—It's always fresh. It's always ready." "Test . . . on a baked apple." "It adds richness to all my cooking." These statements are copied from bill boards advertising dairy products. No long sentences. No long lists of reasons why. One clean cut claim or argument with appropriate pictorial setting—and the goods are sold.—"Poster Advertising and Dairy Products"—Philip Chandler, *The Poster*, 15:5-7, (Jan.) 1924.

✤

Exhibit ideas: new and old.—A collection of stunt ideas, which will keep the public health nurse or other health exhibitor too busy to have time for gathering dull or insipid placards or so called posters with which to plaster the walls of an exhibit booth are to be found in "Just to be More Definite"—Anna K. Behr, *Public Health Nurse*, 16:81-85, (Feb.) 1924.

✤

Where can we get publicity assistants?—The Committee on Municipal Health Department Practice, in its stimulating and constructive report, suggests that the city health officer

should have an assistant for health education and publicity, who should be both young and inexperienced, as well as cheap; $1,800 being the salary proposed. But no method is submitted for locating such desirable workers at all, and especially at that salary figure. Where shall we turn to locate a "young man or a young woman, experienced in the technique of popular education?" Where can we find the man or woman who can grow into a job which calls for facility in the use of so many kinds of skill and such varied knowledge of human nature? Please write your suggestions and tell about your own experience. Nothing will be published without your permission.

✚

To endow or not to endow?—Publicity workers who have to do with money raising will be interested in this discussion of "Benefits and Disadvantages of Hospital Endowments."—Edwin R. Embree, *Modern Hospital*, 22:155-157, (Feb.) 1924.

✚

Where they were.—A session on publicity in connection with a recent state conference of social workers was attended by a number of interested executives and staff members, and one half-time publicity worker. Not a single full-time publicity worker was present. *They* stayed at home hard at work on the job. What about next October? Will the folks who are doing the publicity and educational work have the chance to attend the Health Education and Publicity sessions at Detroit?

✚

A book with 200 authors.—"If the maintenance of health, happiness and efficiency is really a problem for business girls, and if it is true that a considerable number fail to solve the problem, what is to be done about it? One answer in any case leaps to the tongue: let those who have solved, or come nearest solving it, or solved some portion of it, show their solutions. If there is to be a new health book for business girls, and apparently one is needed, let it be an expert one; expert not in the sense that it is written by a doctor to explain laws of health and translate them into rules for business girls, but expert in the sense that it is written by business girls in the hope that from the common stock it may be possible to deduce general principles, rules and suggestions which shall be based, not on theories or counsels of perfection, but on the cool, hard foundation of intimate personal knowledge." So says Sylvia Gray in the introduction to Health Confessions of Business Women by Business Women. This book was compiled from over 200 letters sent in response to a prize offer from the Division of Industrial Hygiene, Provincial Board of Health of Ontario, inviting business girls to write on their health problems and solutions. To secure an "expert" opinion the publication was turned over to several business women in our own office. All who read it agreed with what one of them put into a memorandum for me:

"This book, to my way of thinking, is splendid. From the beginning it held my attention, largely because it is so very practical, and also because it expresses so clearly what the business girl feels in a vague sort of way to be true concerning the problems with which she has to cope. The outstanding problem in the business girl's life is how she may occupy her leisure hours, crowd in the things (or a part of them) which she feels must be done and still retain the strength which the daily routine of a business life demands. To know how by careful study and planning other girls have met and solved these problems is both helpful and stimulating. There are many clever ideas and much usable information in the book."

Some of the chapter headings: The Business Woman's Problem, Philosophy of Health, Board and Lodging, Working Conditions, Personal Maintenance, Self Examination, Food Values. The book is readable. It is practical. The title should be an appealing one to many possible readers.—Health Confessions of Business Women by Business Women, edited by Sylvia Gray. Division of Industrial Hygiene, Provincial Board of Health, Toronto, 265 pp. 1923.

✚

A new magazine for workers in child health.—*Child Health Magazine* succeeds *Mother and Child* as official organ of the American Child Health Association, 370 Seventh Ave., New York City. We can say "yes" most emphatically to the editorial hope that readers will think the new magazine is a "vast improvement" over the old one which did a good job in the field set for it. The most entertaining article in the January, 1924, issue is "Adventures in Health Education" which tells how Topeka school children staged "All Aboard for Healthland" as an outdoor play.

1. Report of the Committee on Municipal Health Department Practice.

PUBLIC HEALTH LEGISLATION

JAMES A. TOBEY, LL.B.

THE PRESIDENT ON FEDERAL SUBSIDIES

In an address made to the heads of the Executive Departments in Washington on January 22nd, President Coolidge opposed a further expansion of Federal subsidies to State governments. This is the first utterance made by the President on this subject and it is known that he refers to the appropriations made for the administration of the Sheppard-Towner Maternity and Infancy Law and like measures which appropriate money to the various States provided the States will furnish similar sums from State funds. The following is the text of the President's remarks:

"I take this occasion to state that I have given much thought to the question of Federal subsidies to State governments. The Federal appropriations for such subsidies cover a wide field. They afford ample precedent for unlimited expansion. I say to you, however, that the financial program of the chief executive does not contemplate expansion of these subsidies. My policy in this matter is not predicated alone on the drain which these subsidies make on the national treasury. This of itself is sufficient cause for concern. But I am fearful that this broadening of the field of government activities is detrimental both to the Federal government and the State governments. Efficiency of Federal operations is impaired as their scope is unduly enlarged. Efficiency of the State governments is impaired as they relinquish and turn over to the Federal government responsibilities which are rightfully theirs."

✦

APPROPRIATION FOR VENEREAL DISEASE CONTROL

The House Committee on Appropriations in reporting the Treasury Department Appropriation Bill made a drastic cut in the allowance for the maintenance and expenses of the Division of Venereal Diseases in the U. S. Public Health Service. The Budget, as transmitted to Congress, authorized an annual appropriation of $149,000 for this work. The House Committee reduced this amount to $25,000. The effect of this reduction would be to terminate completely the coöperative activities with State Boards of Health along these lines; destroy the field force of the Public Health Service engaged in this work; terminate the clinic and research activities carried on at Hot Springs, Arkansas, in connection with the Department of Interior; and bring to an end the educational campaign of national scope which has been conducted from the headquarters of the Public Health Service in Washington against venereal diseases.

The Senate Committee on Appropriations, however, restored the provision appropriating $149,000 for this work. As we prepare this material, the bill had not been reported to the Senate, but when reported this important item will undoubtedly have been included. Officials of the Public Health Service and State Boards were dismayed to find that the House of Representatives had failed to incorporate provision for these funds in this supply bill; and as a result of protests which have come to members of Congress from many parts of the country, favorable action has been taken and the bill will possibly pass in the form in which it goes to the Senate. It will require, however, that the House agree to these Senate changes in the final passage of the measure.

✦

PUBLICATION OF HEALTH PAMPHLETS

HR 6729.—Two bills have been introduced in the Senate and House which have for their purpose the publication of a much larger quantity of bulletins and reports of the U. S. Public Health Service. One of these measures is by Representative Colton and the other by Senator Jones of Washington. Under existing laws, the Public Health Service cannot print more than one thousand copies of any individual bulletin except laboratory bulletins and public health reports. These laws greatly restrict the activities of the Public Health Service in distributing widely throughout the country many bulletins of considerable importance on subjects relating to hygiene, medical progress and sanitation. The existing laws were passed at a time when, due to government extravagance, enormous quantities of money were wasted in printing of useless publications. The restriction clearly should not apply to the valuable publications of the Public Health Service, the very nature of which require publication and distribution in large quantities.

TUBERCULOUS AND NEUROPSYCHIATRIC VETERANS

HR 7070.—This bill has for its purpose a more liberal policy on the part of the government for ex-service men who are suffering from tuberculosis or mental diseases. Under existing laws, service men afflicted with these ailments are not placed on the same basis with reference to compensation and vocational training as men disabled by shot or shell and whose disability is clearly, on its face, traceable to war service. The present measure would change the policy of the government so that ex-service men suffering from tuberculosis or mental disease would be eligible to the benefits of the war insurance law and similar laws, even though the disease developed within a period of five years after discharge from the service.

✤

CONTROL OF NARCOTICS

HJ RES. 162.—This resolution is predicated upon legislation passed at the last session of Congress, which authorized the United States government to participate in the Hague Opium Convention and the League of Nations at Geneva, Switzerland, to have an international agreement made, recognizing that the use of opium products for other than medicinal and scientific purposes is an abuse and not legitimate. The present resolution merely calls upon Congress for the approval of expenditure of money necessary for the participation of our government in two conferences to be held in the year 1924. Subsequent legislation will be necessary to appropriate the money.

✤

HR 7079.—Prohibition of the importation of crude opium for manufacturing heroin is proposed in the bill introduced by Representative Porter of Pennsylvania, Chairman of the Foreign Affairs Committee of the House of Representatives. Congressman Porter has, for several years, taken an earnest interest in legislation to regulate narcotics and was the delegate chosen by President Harding to attend the Geneva, Switzerland, Conference on restriction of production of opium and narcotics. Congressman Porter is confident that a favorable report will be made on the bill by the Committee on Ways and Means to which it has been referred.

BIRTH CONTROL

S 2290.—This bill would modify existing federal laws by permitting the circulation of contraceptive knowledge. It contains a new provision to safeguard the circulation of proper contraceptive knowledge by requiring certification by five physicians that the transportation of such information is not injurious to life or health. The bill legalizes access to birth-control knowledge.

✤

ANTHRAX

HR 6425.—This bill makes it unlawful to import into the United States or ship in interstate commerce, any shaving brush containing horse hair. The bill has for its purpose the prevention of the disease anthrax, and is based upon the theory that shaving brushes made of horse hair are *per se* carriers of anthrax and are thus a menace to public health. Anyone who imports such brushes or ships them between the states may be punished by a fine of not more than one thousand dollars and imprisoned for not more than one year.

✤

EXTENSION OF MATERNITY AND INFANCY ACT

Provisions of the Sheppard-Towner Law are extended to Hawaii by **HR 4121,** passed in the House on January 21, and favorably reported in the Senate on January 26th.

Porto Rico is also asking for the extension of the Maternity and Infancy Act to the mothers and babies of the Island, following the example of Hawaii. The Porto Rican Commissioner, Mr. Davilla, has introduced two bills, **HR 6142,** a bill to amend the Maternity and Infancy Act; and **HR 6294,** a bill extending to Porto Rico the provisions of a number of Federal-aid Acts, including maternity and infancy, good roads, agricultural credits, vocational education and vocational rehabilitation. The former is before the committee on interstate and foreign commerce, the latter before the committee on insular affairs.

✤

MEDICAL DIVISION OF THE VETERANS' BUREAU

A report of the Senate Committee investigating the Veterans' Bureau has been transmitted to the Senate, and in it are contained some discriminating observations regarding

the Medical Division of the Bureau. The following is an excerpt from this part of the report:

"The class of medical men who have been appointed directly by the Veterans' Bureau and used largely in the district offices have been to a large degree selected by reason of political influence and promoted and retained in their positions for the same reason.

"Taking all things into consideration, the medical service of the Veterans' Bureau as an organization is inefficient. This inefficiency is due primarily to:

"(a) The fact that the service does not attract the better class of men for the reason that it offers little opportunity for professional improvement, no permanent status, no fixed promotion, and no retirements and it is in competition with the medical services of the army, navy and public health service, all of which do offer these inducements.

"(b) The lack of customary pleasant relations between physician and patient. The attitude of a great number of service beneficiaries is one of antagonism toward the medical officer. Every attempt at disciplinary measures, every diagnosis tending to affect the disability rating of the veterans, is laid at the door of the medical officer. There is also a great lack of the spirit of coöperation in carrying out remedial measures of cure.

"(c) Political influence which has been brought to bear upon appointments, promotion and retentions in the service, even after cause for dismissal has been found.

"(d) Interference in medical problems by nonmedical persons.

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